| L Number | Hits | Search Text | DB | Time stamp |
|---|---|---|---|---|
| 1 | 3702 | (bonus or option) same (no adj charge or free) | USPAT | 2003/10/17 06:55 |
| 2 | 94 | ((bonus or option) same (no adj charge or free)) and (e or electronic or internet) near (shop or shopping or buying or purchasing or commerce) | USPAT | 2003/10/17 07:24 |
| 3 | 3 | (free or bonus) near item and (e or electronic or internet) near (shop or shopping or buying or purchasing or commerce) | USPAT | 2003/10/17 07:28 |
| 4 | 36 | bonus and (e or electronic or internet) near (shop or shopping or buying or purchasing or commerce) | USPAT | 2003/10/17 09:16 |
| 5 | 1 | 6401074.URPN. | USPAT | 2003/10/17 08:08 |
| 6 | 7 | ("5687322" \| "5798931" \| "5857175" \| "5924078" \| "5932869" \| "5992888" \| "6292786").PN. | USPAT | 2003/10/17 08:08 |
| 7 | 69 | 5687322.URPN. | USPAT | 2003/10/17 08:32 |
| 8 | 0 | 6578012.URPN. | USPAT | 2003/10/17 09:14 |
| 9 | 37 | ("4750119" \| "4885685" \| "4932485" \| "4941090" \| "4949256" \| "4992940" \| "5025372" \| "5056019" \| "5117355" \| "5200889" \| "5202826" \| "5233514" \| "5287268" \| "5483444" \| "5513102" \| "5537314" \| "5687322" \| "5689100" \| "5708780" \| "5715314" \| "5734838" \| "5761648" \| "5765141" \| "5774870" \| "5794210" \| "5806044" \| "5806045" \| "5909492" \| "5937390" \| "6009412" \| "6009415" \| "6029141" \| "6049778" \| "6061660" \| "6081788" \| "6148400" \| "6243688").PN. | USPAT | 2003/10/17 09:15 |
| 10 | 37 | (("4750119" \| "4885685" \| "4932485" \| "4941090" \| "4949256" \| "4992940" \| "5025372" \| "5056019" \| "5117355" \| "5200889" \| "5202826" \| "5233514" \| "5287268" \| "5483444" \| "5513102" \| "5537314" \| "5687322" \| "5689100" \| "5708780" \| "5715314" \| "5734838" \| "5761648" \| "5765141" \| "5774870" \| "5794210" \| "5806044" \| "5806045" \| "5909492" \| "5937390" \| "6009412" \| "6009415" \| "6029141" \| "6049778" \| "6061660" \| "6081788" \| "6148400" \| "6243688").PN.) not 5687322.URPN. | USPAT | 2003/10/17 09:16 |
| 11 | 8 | 6009412.URPN. | USPAT | 2003/10/17 09:31 |

reviewed all circled

US006401074B1

(12) **United States Patent**
**Sleeper**

(10) **Patent No.: US 6,401,074 B1**
(45) **Date of Patent: Jun. 4, 2002**

(54) **RETAIL TRANSACTION PROMOTION SYSTEM**

(75) Inventor: **Dean A. Sleeper**, Seattle, WA (US)

(73) Assignee: **Access**, Seattle, WA (US)

( * ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/096,548**

(22) Filed: **Jun. 12, 1998**

(51) **Int. Cl.**[7] ..... **G06F 17/60**
(52) **U.S. Cl.** ..... **705/14**; 705/16; 705/21; 235/383
(58) **Field of Search** ..... 705/14, 26, 10, 705/16, 21; 235/383; 186/59

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| WO | WO97/05556 | * | 2/1997 |

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Space-Saving Terminal Marks NCR's First Foray into Kiosks, *RTnews*, Aug. 1998.

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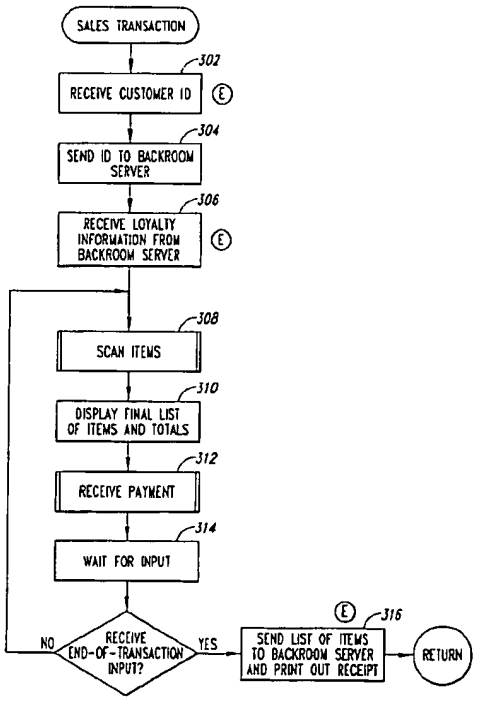
*Primary Examiner*—Tariq R. Hafiz
*Assistant Examiner*—Romain Jeanty
(74) *Attorney, Agent, or Firm*—Hendricks & Lewis

(57) **ABSTRACT**

An augmented point of sale system that displays, and that may broadcast, during a retail transaction, promotional information to a customer selected on the basis of the context of the transaction. An existing front-end POS system is augmented with an auxiliary display device intended for viewing by a customer while the customer interacts with the sales clerk in order to conduct a retail transaction. Software components are added to the point of sale system in order to generate messages corresponding to events that occur during the transaction and to, in turn, translate those events into display images displayed on the auxiliary display device. The auxiliary display device can display text, broadcast music or audio information, show video clips and other real-time dynamic media, and display static images.

**11 Claims, 22 Drawing Sheets**



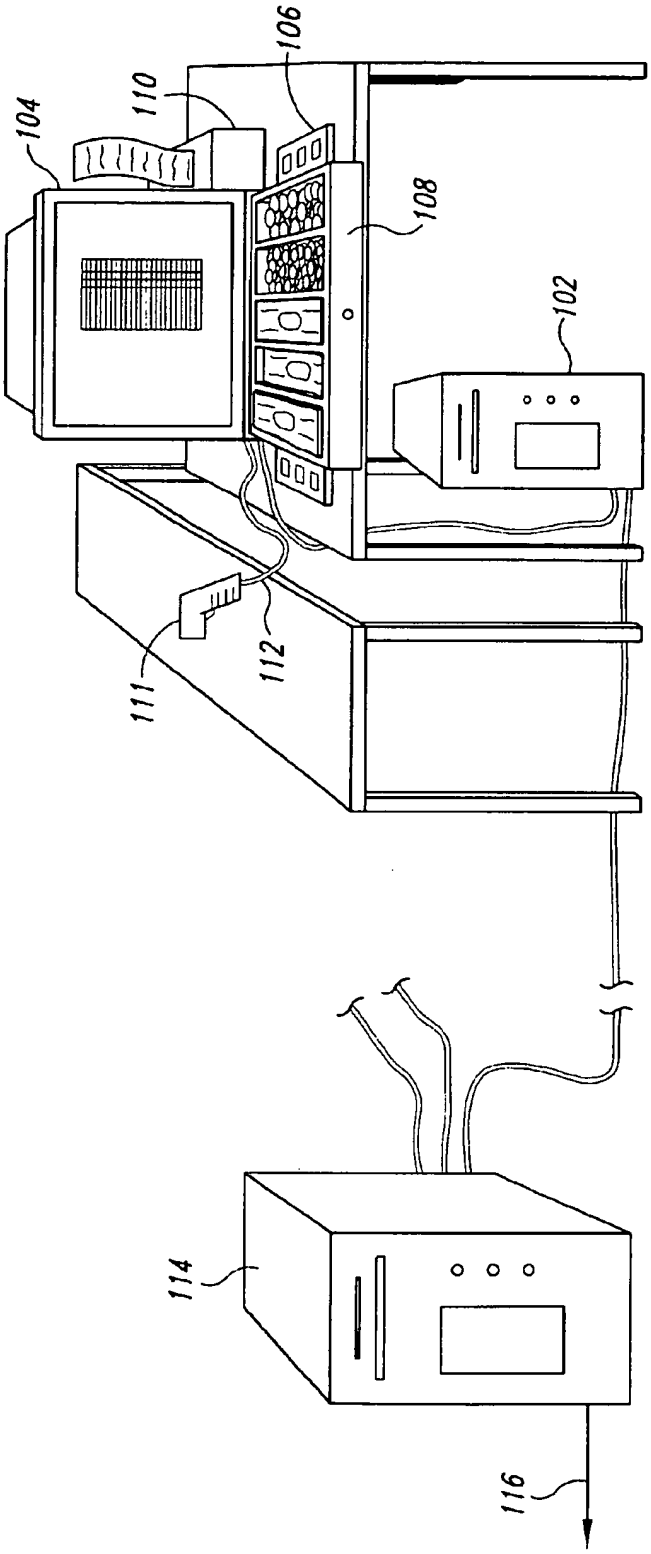



Fig. 1

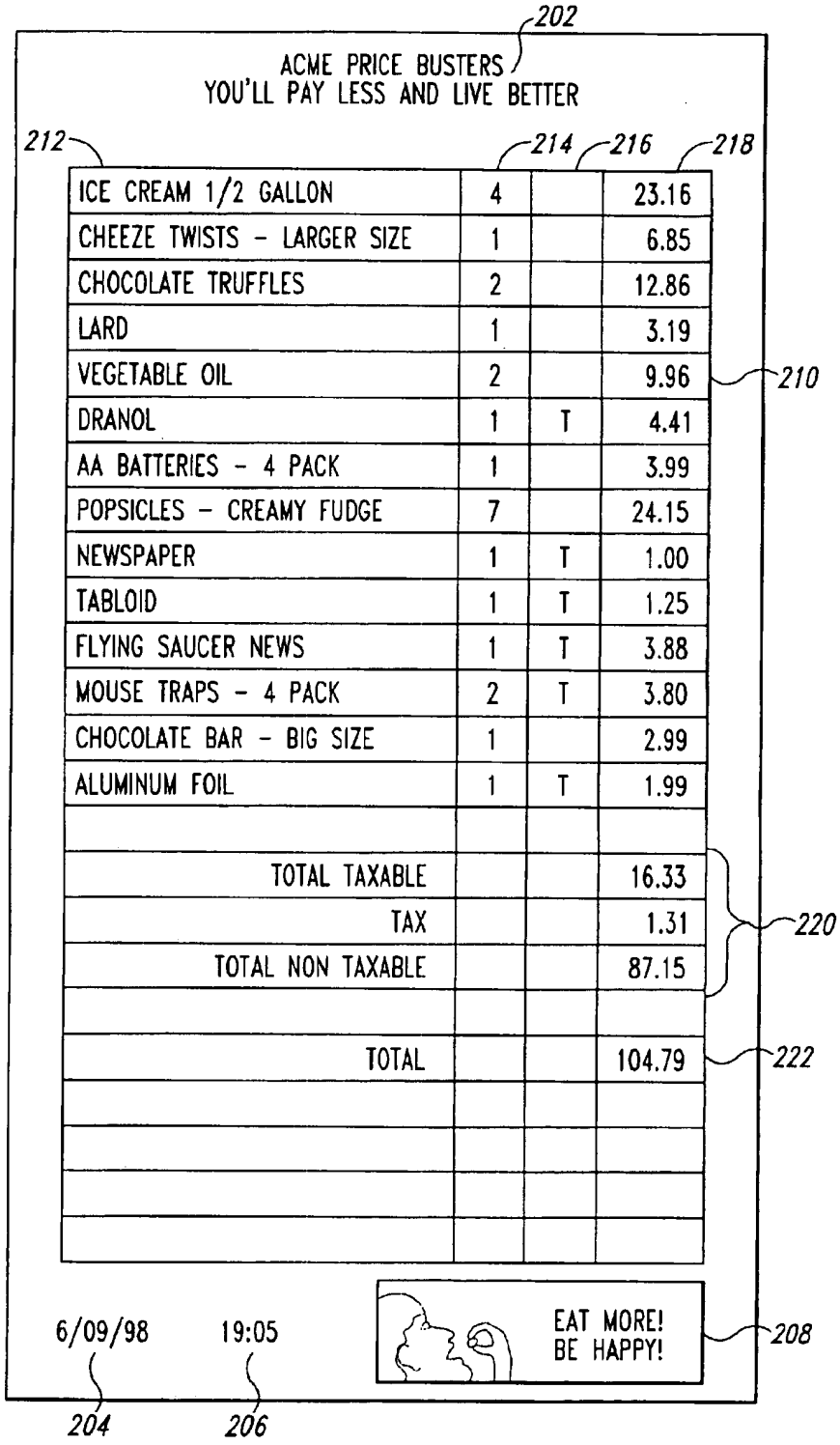

202
ACME PRICE BUSTERS
YOU'LL PAY LESS AND LIVE BETTER
212
214
216
218
ICE CREAM 1/2 GALLON 4 23.16
CHEEZE TWISTS - LARGER SIZE 1 6.85
CHOCOLATE TRUFFLES 2 12.86
LARD 1 3.19
VEGETABLE OIL 2 9.96
DRANOL 1 T 4.41
AA BATTERIES - 4 PACK 1 3.99
POPSICLES - CREAMY FUDGE 7 24.15
NEWSPAPER 1 T 1.00
TABLOID 1 T 1.25
FLYING SAUCER NEWS 1 T 3.88
MOUSE TRAPS - 4 PACK 2 T 3.80
CHOCOLATE BAR - BIG SIZE 1 2.99
ALUMINUM FOIL 1 T 1.99
210
TOTAL TAXABLE 16.33
TAX 1.31
TOTAL NON TAXABLE 87.15
220
TOTAL 104.79
222
6/09/98
19:05
EAT MORE!
BE HAPPY!
208
204
206

*Fig. 2*

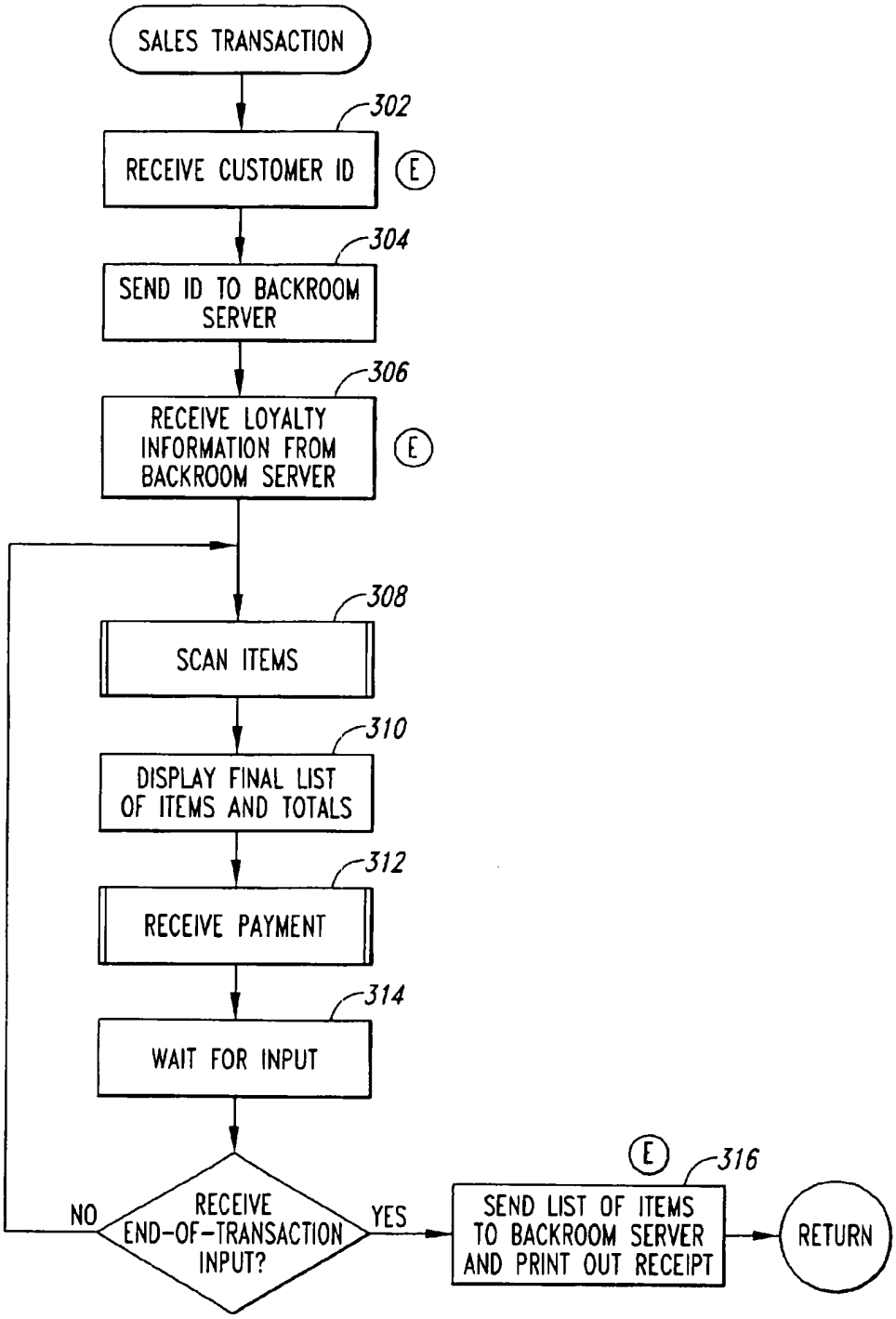

SALES TRANSACTION
302
RECEIVE CUSTOMER ID
E
304
SEND ID TO BACKROOM SERVER
306
RECEIVE LOYALTY INFORMATION FROM BACKROOM SERVER
E
308
SCAN ITEMS
310
DISPLAY FINAL LIST OF ITEMS AND TOTALS
312
RECEIVE PAYMENT
314
WAIT FOR INPUT
RECEIVE END-OF-TRANSACTION INPUT?
NO
YES
E
316
SEND LIST OF ITEMS TO BACKROOM SERVER AND PRINT OUT RECEIPT
RETURN

*Fig. 3*

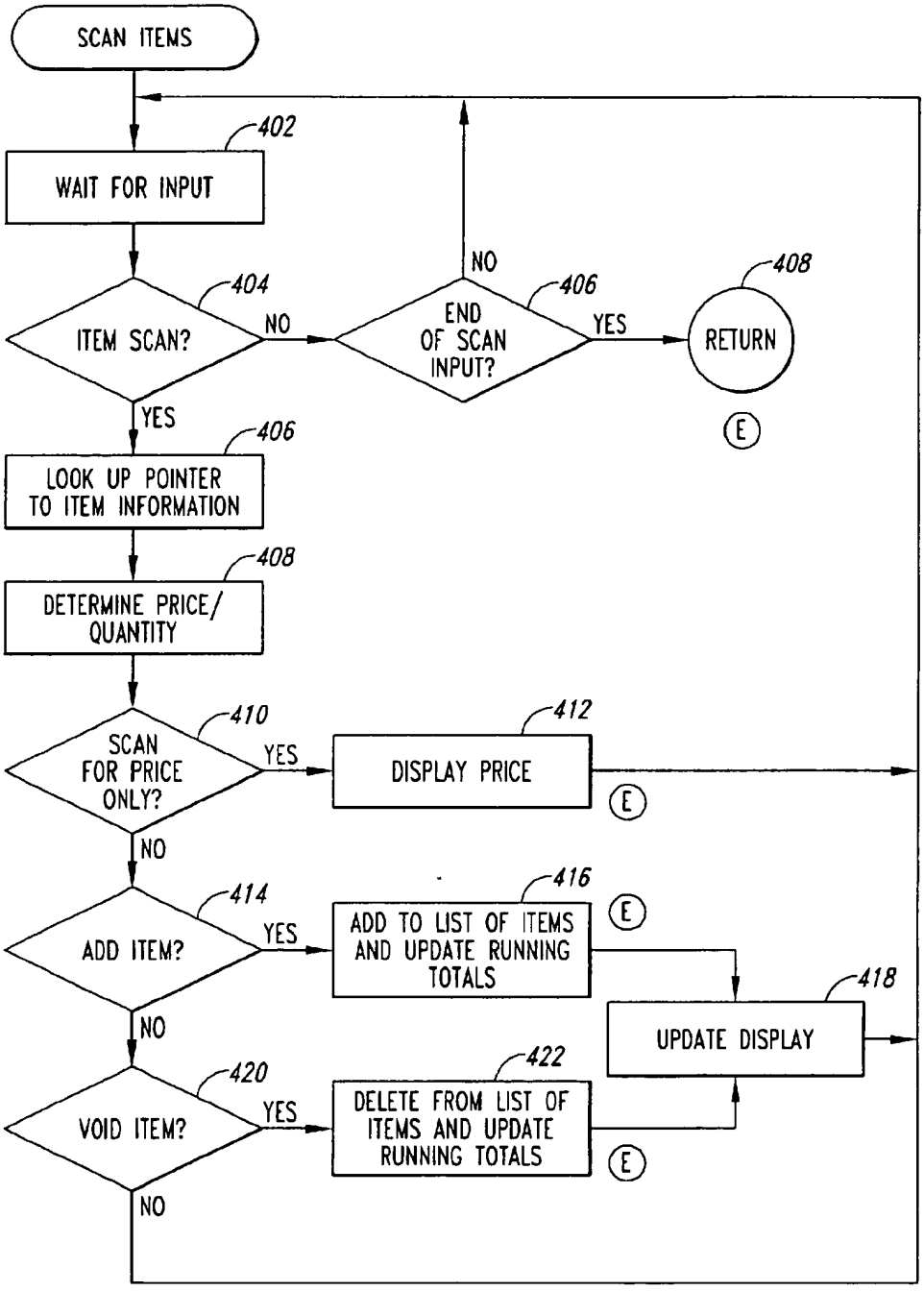

SCAN ITEMS
402
WAIT FOR INPUT
404
ITEM SCAN?
NO
406
END OF SCAN INPUT?
NO
YES
408
RETURN
E
YES
406
LOOK UP POINTER TO ITEM INFORMATION
408
DETERMINE PRICE/ QUANTITY
410
SCAN FOR PRICE ONLY?
YES
412
DISPLAY PRICE
E
NO
414
ADD ITEM?
YES
416
ADD TO LIST OF ITEMS AND UPDATE RUNNING TOTALS
E
418
UPDATE DISPLAY
NO
420
VOID ITEM?
YES
422
DELETE FROM LIST OF ITEMS AND UPDATE RUNNING TOTALS
E
NO

*Fig. 4*

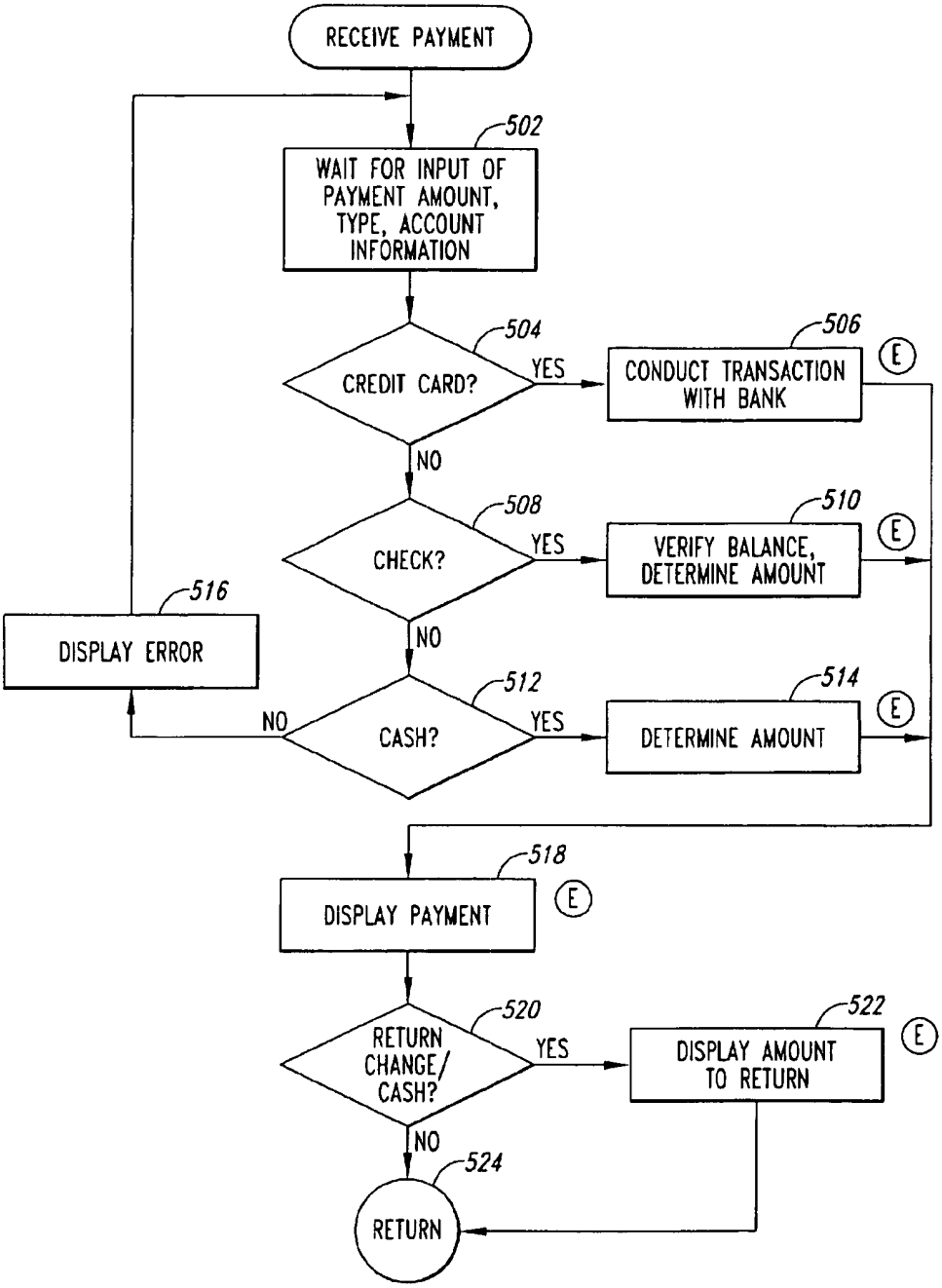

RECEIVE PAYMENT
502
WAIT FOR INPUT OF PAYMENT AMOUNT, TYPE, ACCOUNT INFORMATION
504
CREDIT CARD?
YES
506
CONDUCT TRANSACTION WITH BANK
E
NO
508
CHECK?
YES
510
VERIFY BALANCE, DETERMINE AMOUNT
E
NO
516
DISPLAY ERROR
512
CASH?
NO
YES
514
DETERMINE AMOUNT
E
518
DISPLAY PAYMENT
E
520
RETURN CHANGE/ CASH?
YES
522
DISPLAY AMOUNT TO RETURN
E
NO
524
RETURN

*Fig. 5*

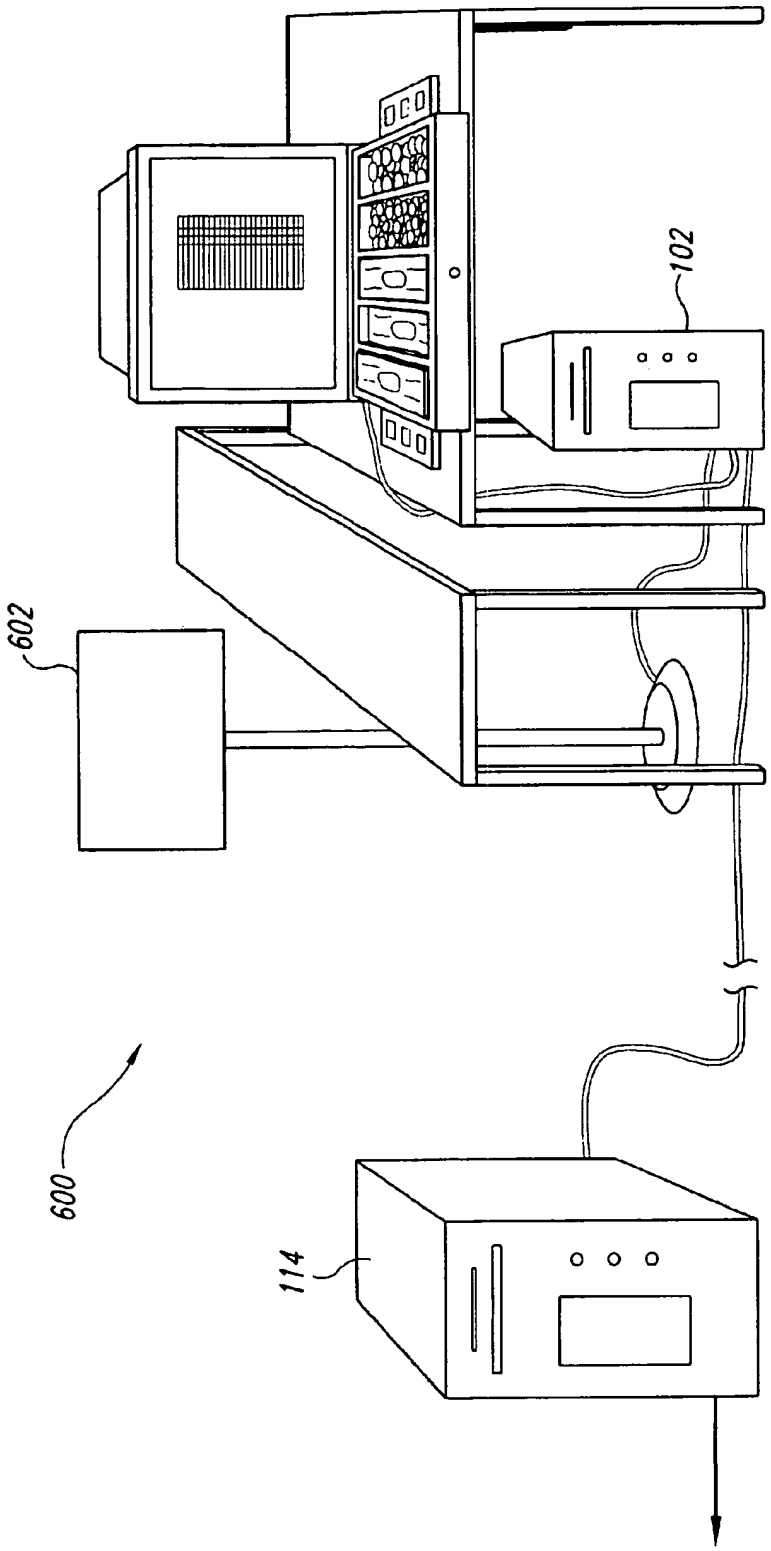



Fig. 6

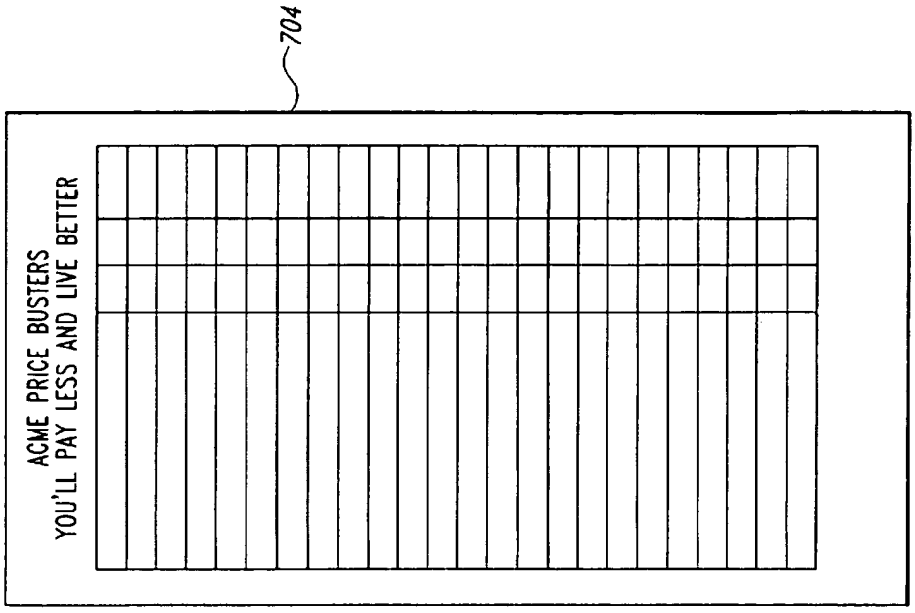

704
ACME PRICE BUSTERS
YOU'LL PAY LESS AND LIVE BETTER
WELCOME JANE DOE
702

Fig. 7

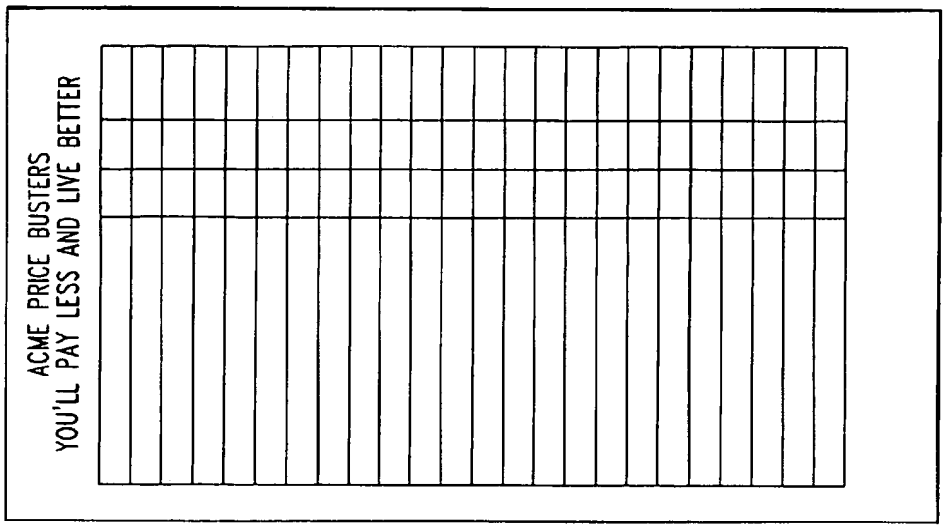

ACME PRICE BUSTERS
YOU'LL PAY LESS AND LIVE BETTER
JANE DOE
YOU HAVE 319 BONUS POINTS
YOU ARE ELIGIBLE FOR VOLUME DISCOUNTS ON:
FROSTY FROG CEREAL
ALL PET HEALTH PRODUCTS
ACME SHAVING CREAM

*Fig. 8*

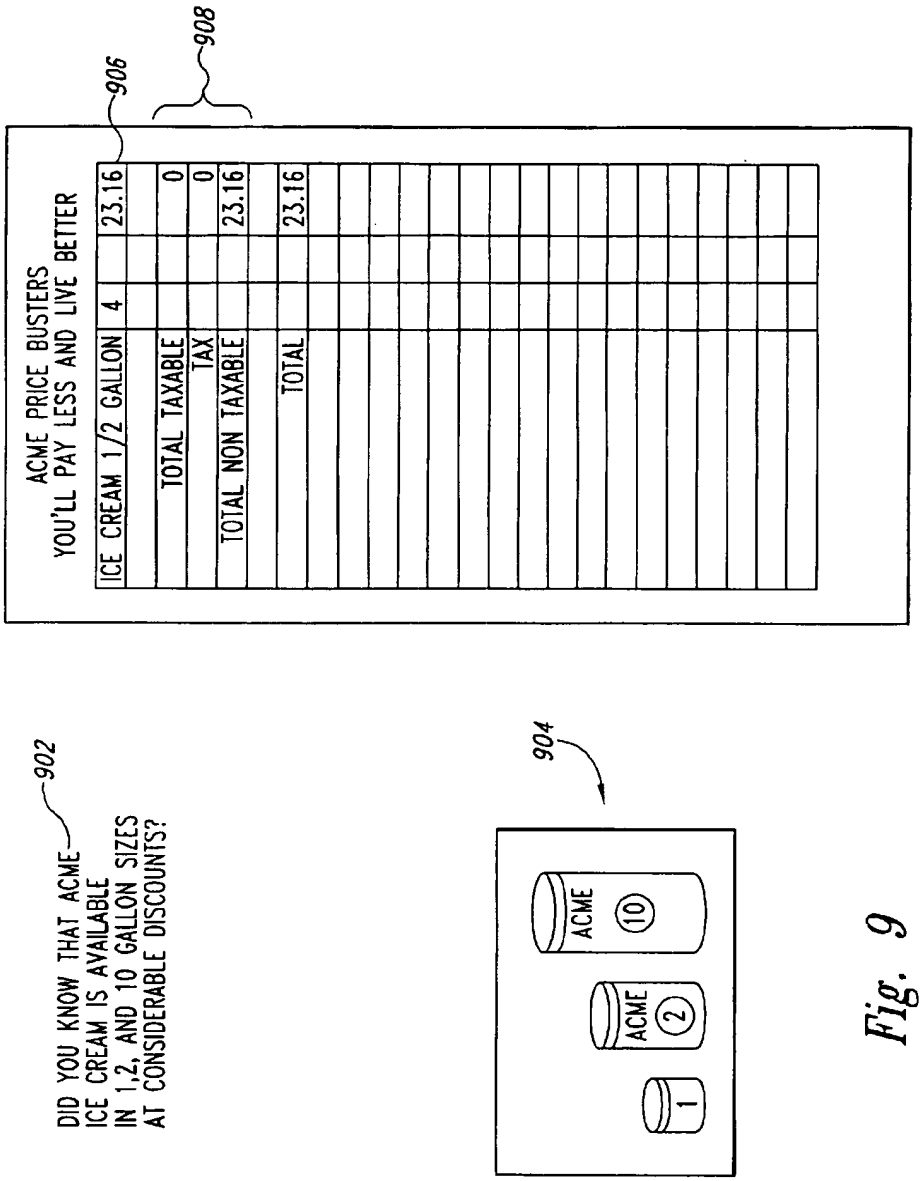
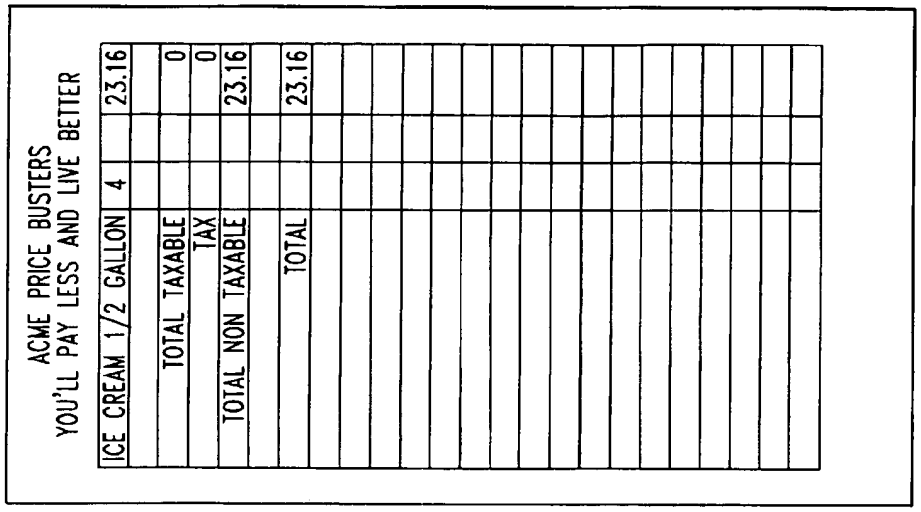

908
906
ACME PRICE BUSTERS
YOU'LL PAY LESS AND LIVE BETTER
ICE CREAM 1/2 GALLON 4 23.16
TOTAL TAXABLE 0
TAX 0
TOTAL NON TAXABLE 23.16
TOTAL 23.16
902
DID YOU KNOW THAT ACME
ICE CREAM IS AVAILABLE
IN 1,2, AND 10 GALLON SIZES
AT CONSIDERABLE DISCOUNTS?
904
ACME 10
ACME 2
1

Fig. 9


ACME PRICE BUSTERS
YOU'LL PAY LESS AND LIVE BETTER
ICE CREAM 1/2 GALLON 4 23.16
TOTAL TAXABLE 0
TAX 0
TOTAL NON TAXABLE 23.16
TOTAL 23.16

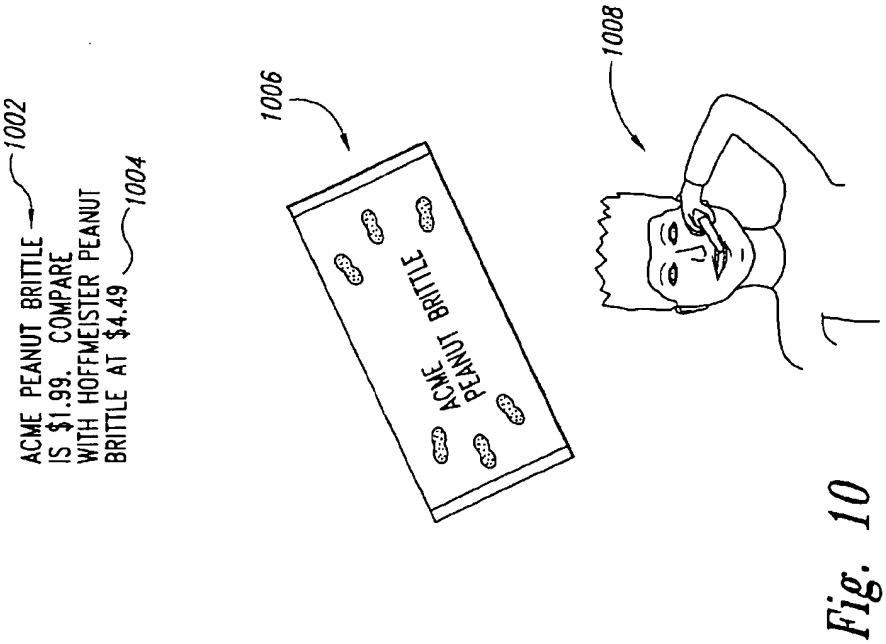

ACME PEANUT BRITTLE
IS $1.99. COMPARE
WITH HOFFMEISTER PEANUT
BRITTLE AT $4.49
1002
1004
1006
ACME PEANUT BRITTLE
1008

Fig. 10

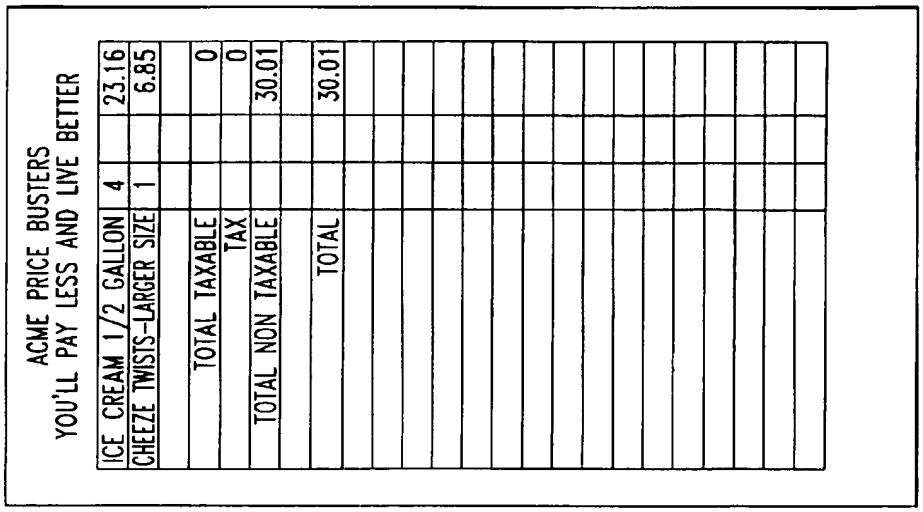

ACME PRICE BUSTERS
YOU'LL PAY LESS AND LIVE BETTER
ICE CREAM 1/2 GALLON 4 23.16
CHEEZE TWISTS-LARGER SIZE 1 6.85
TOTAL TAXABLE 0
TAX 0
TOTAL NON TAXABLE 30.01
TOTAL 30.01
THE SURGEON GENERAL'S RECENT REPORT ON CHEEZE TWISTS MAY BE OF INTEREST TO YOU
CHEEZE TWISTS PREVENT HEART DISEASE AND CANCER

*Fig. 11*

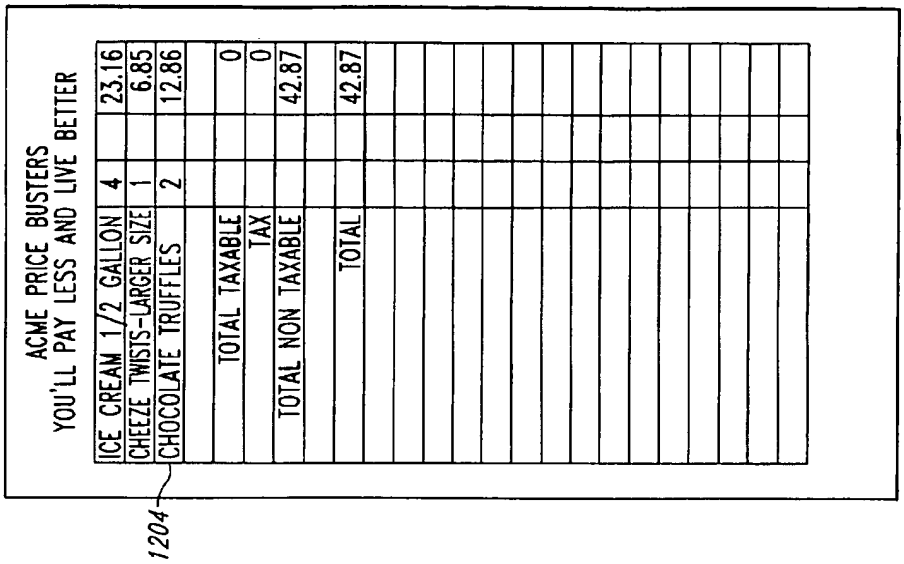
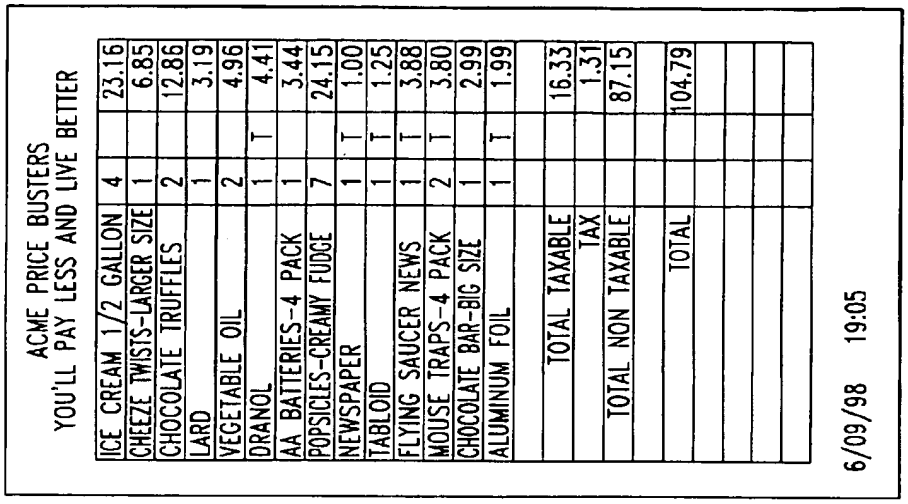
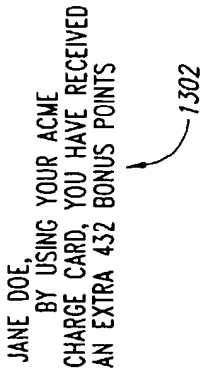

ACME PRICE BUSTERS
YOU'LL PAY LESS AND LIVE BETTER
ICE CREAM 1/2 GALLON 4 23.16
CHEEZE TWISTS-LARGER SIZE 1 6.85
CHOCOLATE TRUFFLES 2 12.86
TOTAL TAXABLE 0
TAX 0
TOTAL NON TAXABLE 42.87
TOTAL 42.87
1204
JANE DOE
THIS IS THE 80TH BOX OF
ACME TRUFFLES THAT YOU HAVE
PURCHASED THIS MONTH. YOUR NEXT
BOX WILL BE 1/2 PRICE, AND
ALL SUBSEQUENT BOXES WILL BE
AT 1/3 THE NORMAL PRICE. THANK YOU
FOR BUYING ACME TRUFFLES.
1202

Fig. 12


ACME PRICE BUSTERS
YOU'LL PAY LESS AND LIVE BETTER
ICE CREAM 1/2 GALLON 4 23.16
CHEEZE TWISTS-LARGER SIZE 1 6.85
CHOCOLATE TRUFFLES 2 12.86
LARD 1 3.19
VEGETABLE OIL 2 4.96
DRANOL 1 T 4.41
AA BATTERIES-4 PACK 1 3.44
POPSICLES-CREAMY FUDGE 7 24.15
NEWSPAPER 1 T 1.00
TABLOID 1 T 1.25
FLYING SAUCER NEWS 1 T 3.88
MOUSE TRAPS-4 PACK 2 T 3.80
CHOCOLATE BAR-BIG SIZE 1 2.99
ALUMINUM FOIL 1 T 1.99
TOTAL TAXABLE 16.33
TAX 1.31
TOTAL NON TAXABLE 87.15
TOTAL 104.79
6/09/98 19:05


JANE DOE,
BY USING YOUR ACME
CHARGE CARD, YOU HAVE RECEIVED
AN EXTRA 432 BONUS POINTS
1302

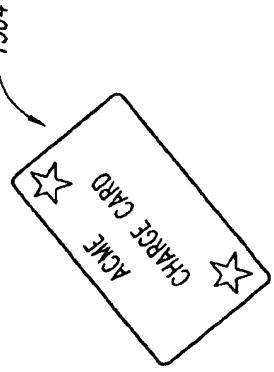

1304
ACME
CHARGE CARD

*Fig. 13*

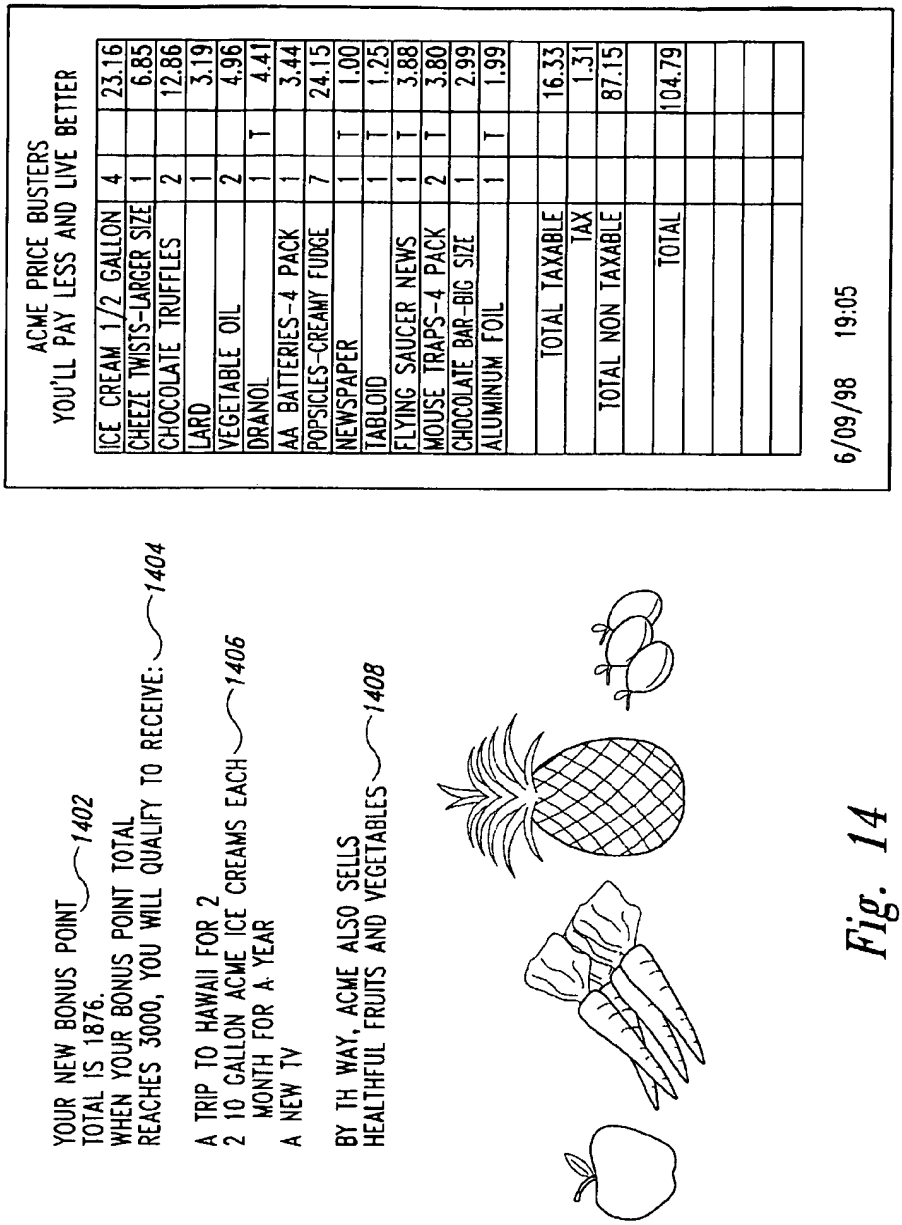

ACME PRICE BUSTERS
YOU'LL PAY LESS AND LIVE BETTER
ICE CREAM 1/2 GALLON 4 23.16
CHEEZE TWISTS-LARGER SIZE 1 6.85
CHOCOLATE TRUFFLES 2 12.86
LARD 1 3.19
VEGETABLE OIL 2 4.96
DRANOL 1 T 4.41
AA BATTERIES-4 PACK 1 3.44
POPSICLES-CREAMY FUDGE 7 24.15
NEWSPAPER 1 T 1.00
TABLOID 1 T 1.25
FLYING SAUCER NEWS 1 T 3.88
MOUSE TRAPS-4 PACK 2 T 3.80
CHOCOLATE BAR-BIG SIZE 1 2.99
ALUMINUM FOIL 1 T 1.99
TOTAL TAXABLE 16.33
TAX 1.31
TOTAL NON TAXABLE 87.15
TOTAL 104.79
6/09/98 19:05
YOUR NEW BONUS POINT 1402
TOTAL IS 1876.
WHEN YOUR BONUS POINT TOTAL
REACHES 3000, YOU WILL QUALIFY TO RECEIVE: 1404
A TRIP TO HAWAII FOR 2
2 10 GALLON ACME ICE CREAMS EACH 1406
MONTH FOR A YEAR
A NEW TV
BY TH WAY, ACME ALSO SELLS
HEALTHFUL FRUITS AND VEGETABLES 1408

*Fig. 14*

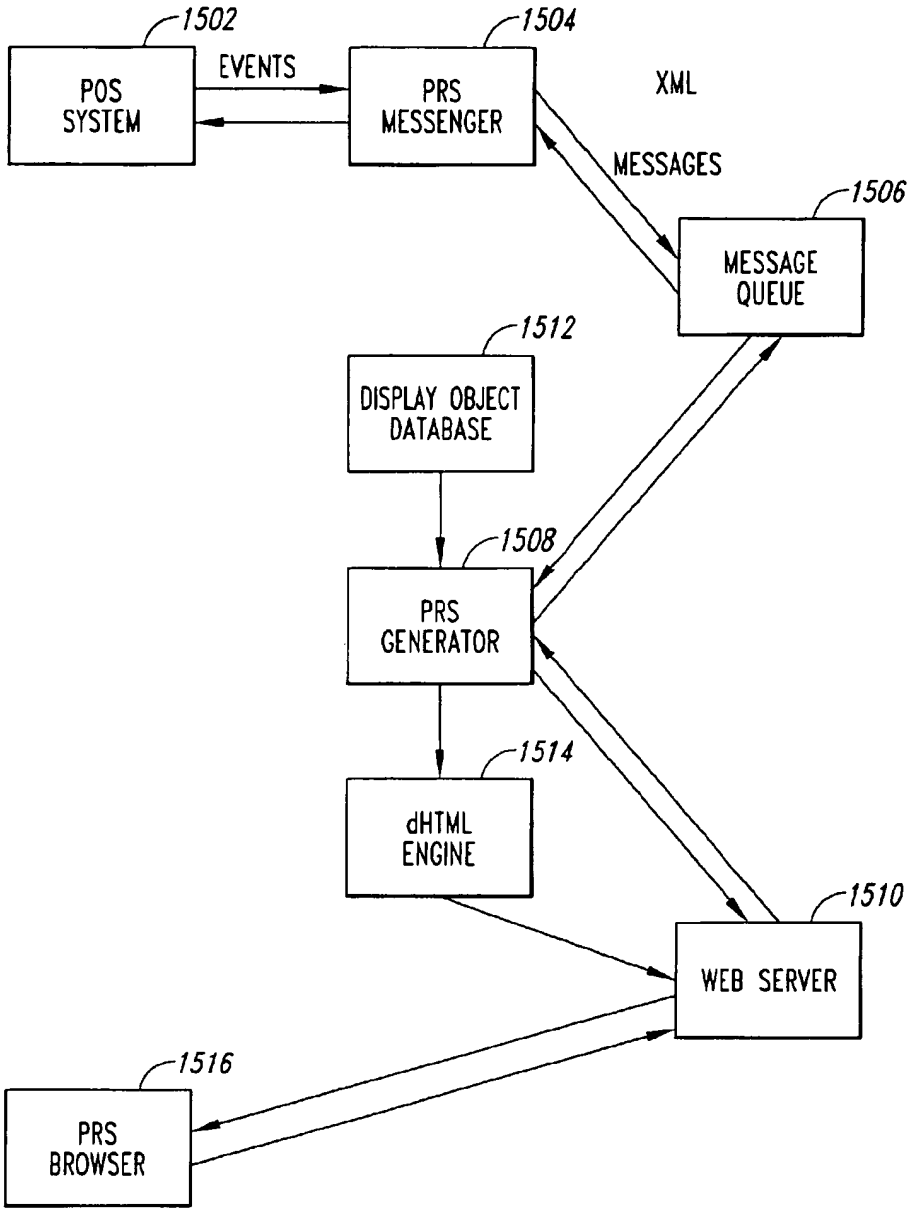

1502
POS SYSTEM
EVENTS
1504
PRS MESSENGER
XML
MESSAGES
1506
MESSAGE QUEUE
1512
DISPLAY OBJECT DATABASE
1508
PRS GENERATOR
1514
dHTML ENGINE
1510
WEB SERVER
1516
PRS BROWSER

*Fig. 15*

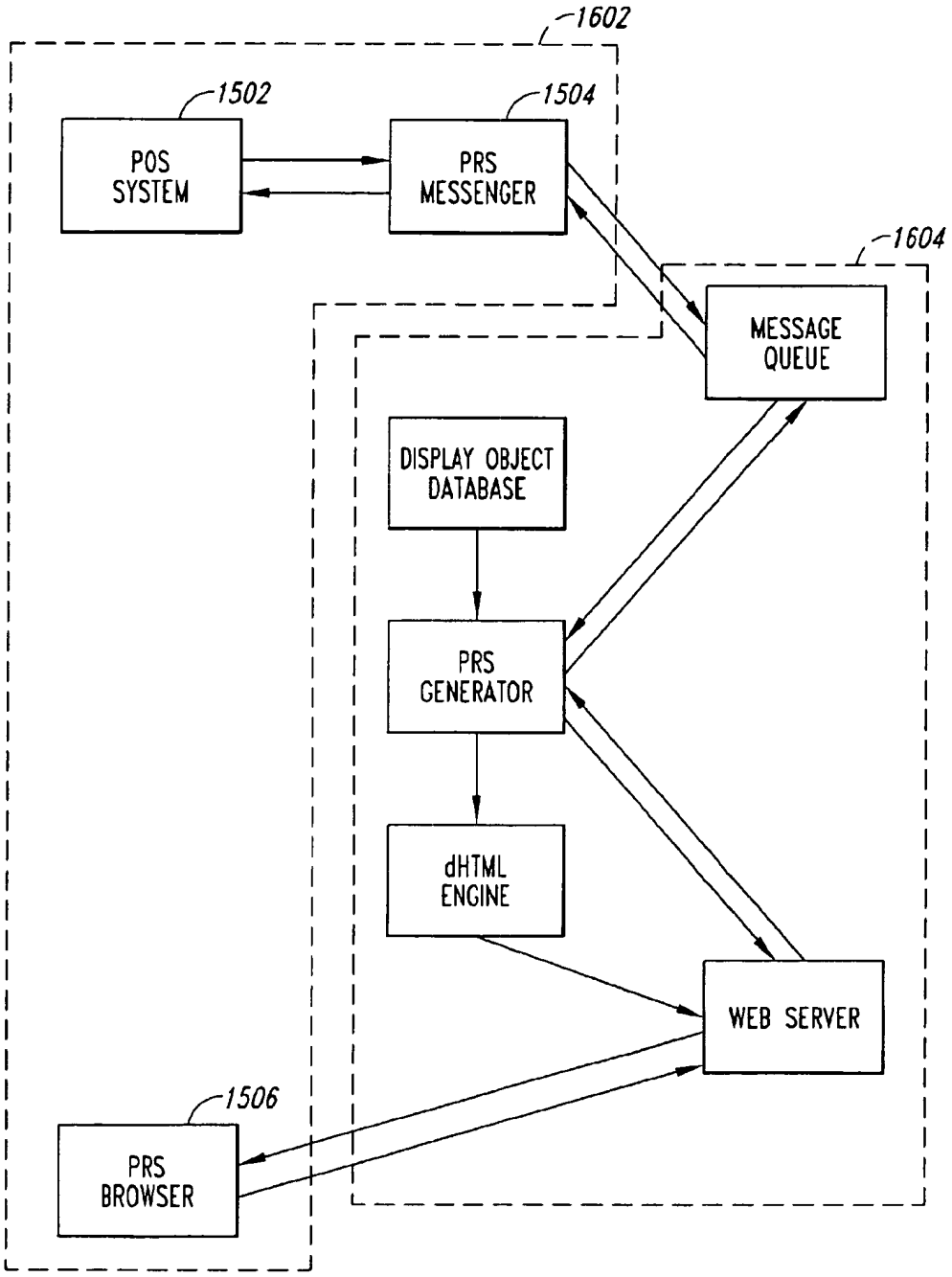

1602
1502
1504
POS SYSTEM
PRS MESSENGER
1604
MESSAGE QUEUE
DISPLAY OBJECT DATABASE
PRS GENERATOR
dHTML ENGINE
WEB SERVER
1506
PRS BROWSER

*Fig. 16*

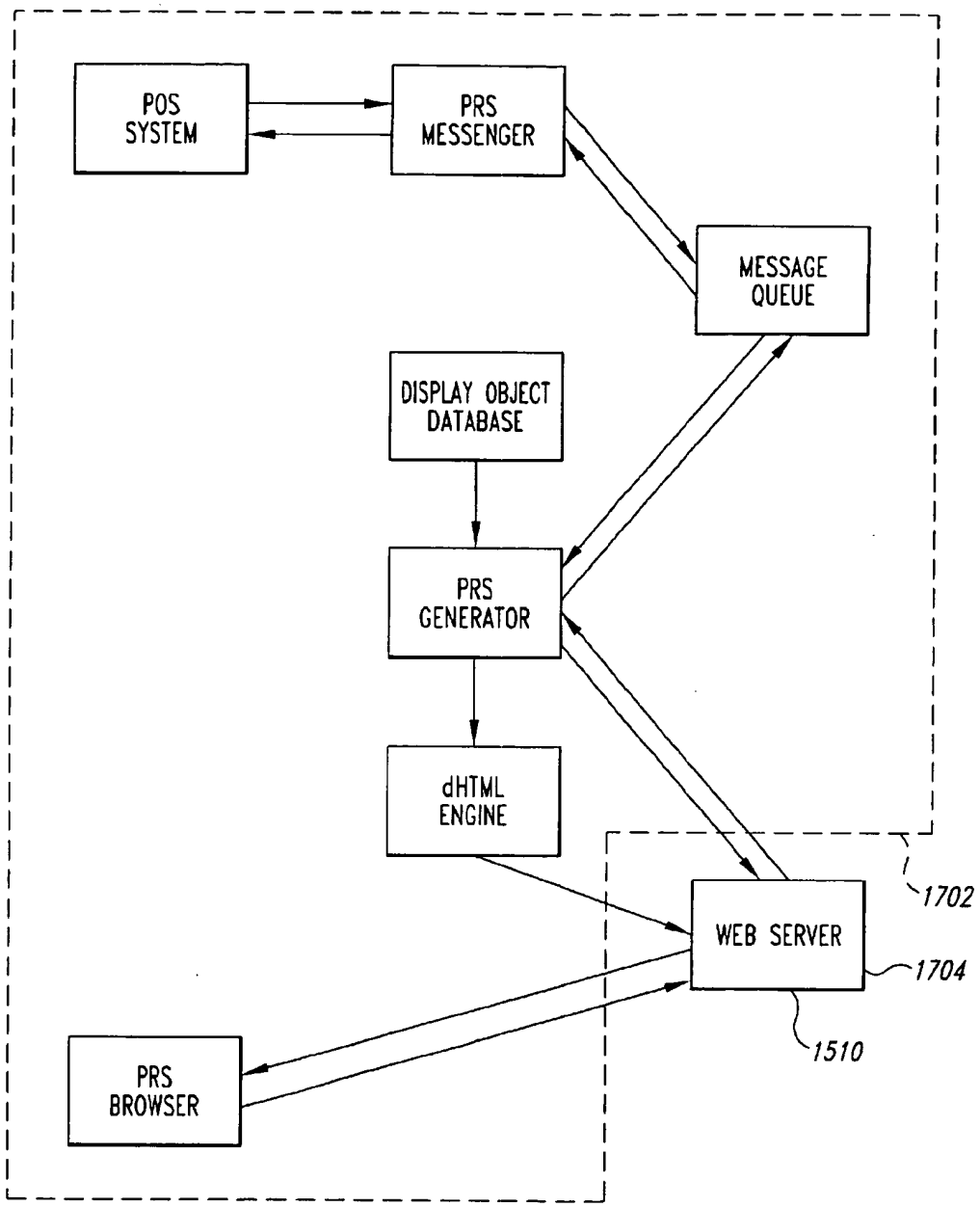

POS SYSTEM
PRS MESSENGER
MESSAGE QUEUE
DISPLAY OBJECT DATABASE
PRS GENERATOR
dHTML ENGINE
WEB SERVER
PRS BROWSER
1702
1704
1510

*Fig. 17*

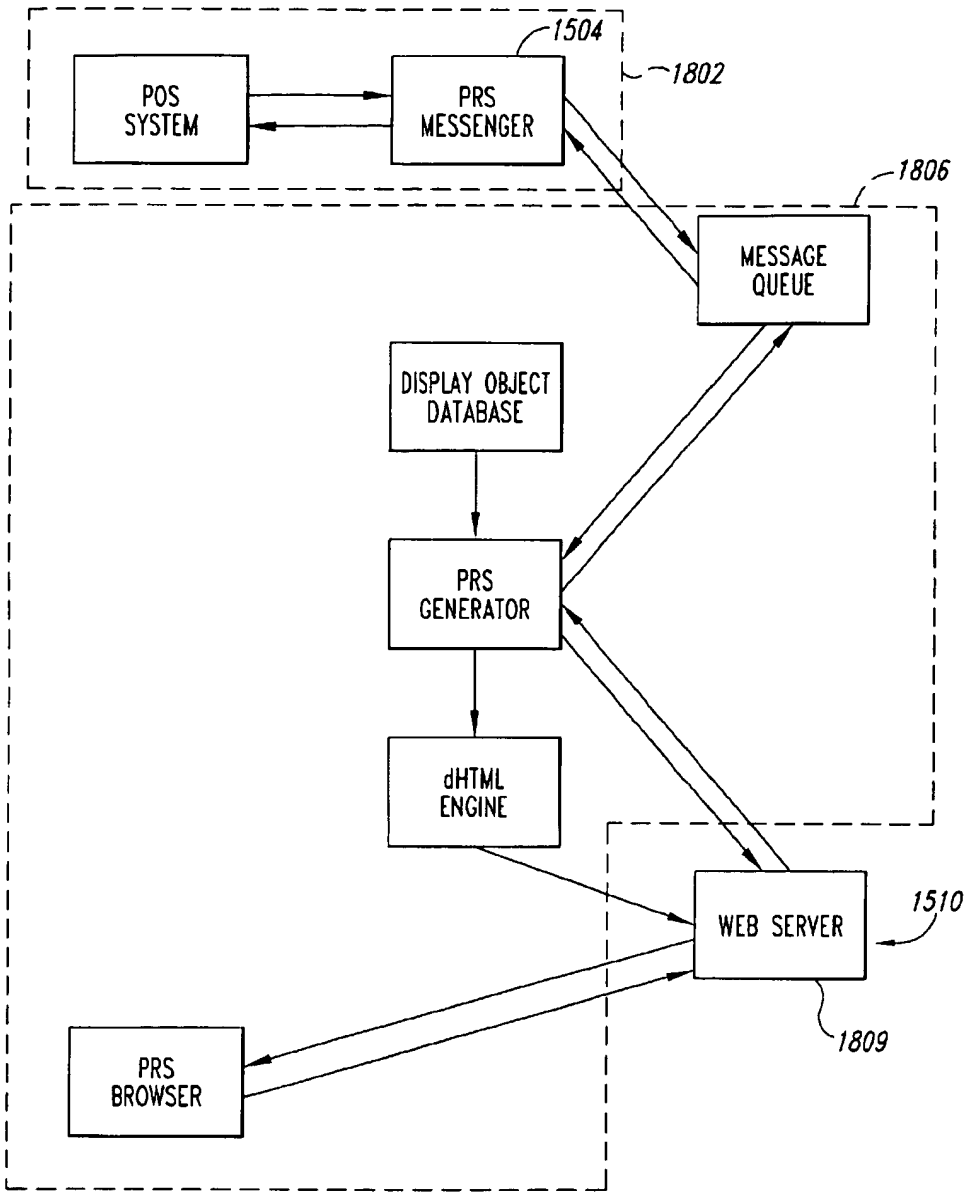

1504
1802
POS SYSTEM
PRS MESSENGER
1806
MESSAGE QUEUE
DISPLAY OBJECT DATABASE
PRS GENERATOR
dHTML ENGINE
WEB SERVER
1510
1809
PRS BROWSER

*Fig. 18*

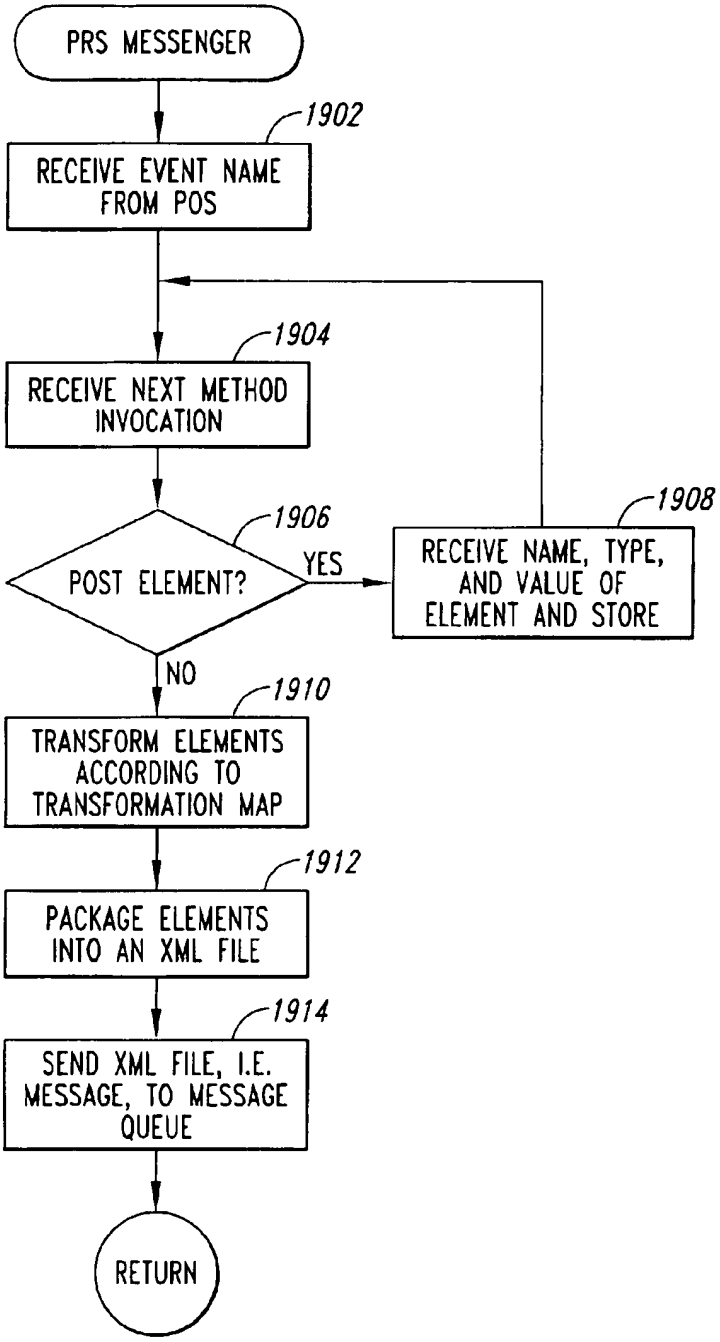

PRS MESSENGER
1902
RECEIVE EVENT NAME FROM POS
1904
RECEIVE NEXT METHOD INVOCATION
1906
POST ELEMENT?
YES
1908
RECEIVE NAME, TYPE, AND VALUE OF ELEMENT AND STORE
NO
1910
TRANSFORM ELEMENTS ACCORDING TO TRANSFORMATION MAP
1912
PACKAGE ELEMENTS INTO AN XML FILE
1914
SEND XML FILE, I.E. MESSAGE, TO MESSAGE QUEUE
RETURN

*Fig. 19*

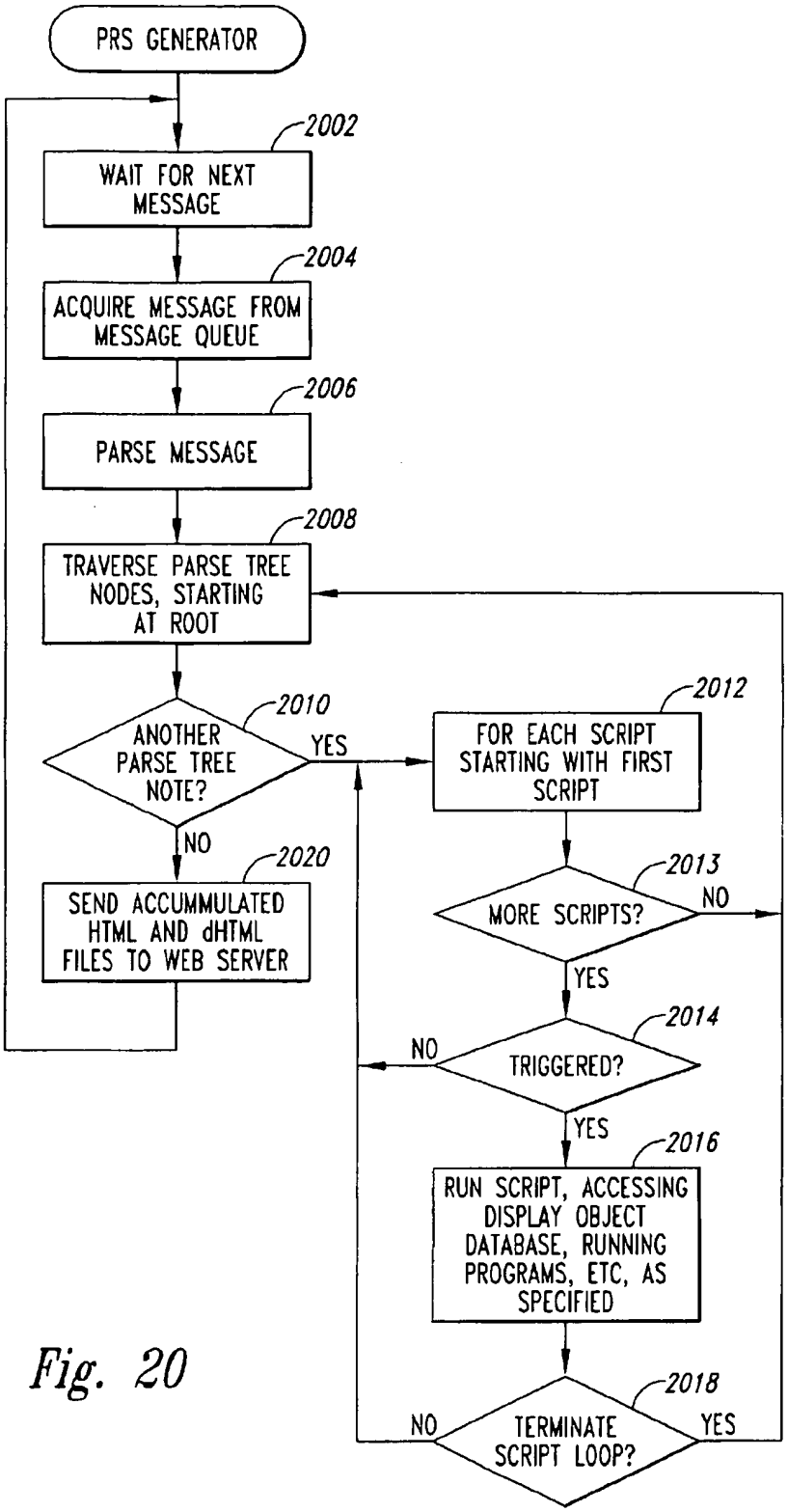

PRS GENERATOR
2002
WAIT FOR NEXT MESSAGE
2004
ACQUIRE MESSAGE FROM MESSAGE QUEUE
2006
PARSE MESSAGE
2008
TRAVERSE PARSE TREE NODES, STARTING AT ROOT
2010
ANOTHER PARSE TREE NOTE?
YES
NO
2012
FOR EACH SCRIPT STARTING WITH FIRST SCRIPT
2013
MORE SCRIPTS?
NO
YES
2014
TRIGGERED?
NO
YES
2016
RUN SCRIPT, ACCESSING DISPLAY OBJECT DATABASE, RUNNING PROGRAMS, ETC, AS SPECIFIED
2018
TERMINATE SCRIPT LOOP?
NO
YES
2020
SEND ACCUMMULATED HTML AND dHTML FILES TO WEB SERVER

*Fig. 20*

```
<?xml version='1.0'?>
<PROMOS GENERATOR INSTRUCTIONS>

<GUID>()<GUID>

<TIMESTAMP>
<DATE>01012000</DATE>
<TIME>01010101</TIME>
</TIMESTAMP>
                                   2104          2110
2102 <BANNER>Transaction Presentation Banner</BANNER>
<VREGISTERTAPE>Virtual Register Tape<VREGISTERTAPE>

<PRESENTATION NAME>Free Prints From Slides</PRESENTATION NAME>
<PRESENTATION TYPE>Transaction</PRESENTATION TYPE>

<PRESENTATION TRIGGER>
<TRIGGER MAX>1</TRIGGER MAX>
<TRIGGER PRIORITY>4</TRIGGER PRIORITY>
<SCRIPT TYPE>VBScript</SCRIPT TYPE>
2112 <SCRIPT>IF UPC="1234567890"PLAY PROPOSITION
2106 "http://www.server.com/freeprnt.swf"</SCRIPT> AND CALL PROGRAM
2108 "http://www.server.com/dSIGN-fTRANSACT -o{PRSENTATION
NAME}.HTM"</SCRIPT>
</PRESENTATION TRIGGER>

<PROPOSITION VALUE>
<PROPVAL INIT>1</PROPVAL INIT>
<PROPVAL MAX>9</PROPVAL MAX>
</PROPOSITION VALUE>

<PROPOSITION INCREMENTATION>
<INCREMENTATION VALUE>1</INCREMENTATION VALUE>
<PROPINC TRIGGER>TransactionTotal</PROPINC TRIGGER>
<PROPINC TRIGGER VALUE>10.00</PROPINC TRIGGER VALUE>
<PROPINC PATTERN>smooth</PROPINC TRIGGER>
</PROPOSITION INCREMENTATION>

<PROPOSITION END>
<PROPEND PRESENTATION>Free Prints From Slides Complete</PROPEND
PRESENTATION>
<THANK YOU>http://www.server.com/thankyou.gif</THANK YOU>
</PROPOSITION END>
```

*Fig. 21A*

```
<LOYALTY VALUE>
<LOYALTYVAL INIT>CUSTOMER BALANCE</LOYALTYVAL INIT>
<LOYALTYVAL MIN>0</LOYALTYVAL MIN>
<LOYALTYVAL MAX>50</LOYALTYVAL MAX>
<LOYALTY VALUE>

<LOYALTY INCREMENTATION>
<INCREMENTATION VALUE>Price</INCREMENTATION VALUE>
<LOYALTYINC TRIGGER>AddItem</LOYALTYINC TRIGGER>
<LOYALTYINC TRIGGER VALUE>0.00</LOYALTYINC TRIGGER VALUE>
<LOYALTYINC PATTERN>DECREMENT</LOYALTYINC TRIGGER>
</LOYALTY INCREMENTATION>

<LOYALTY STATE RESTORE>
<LOYSTRES VALUE>Customer Balance</LOYSTRES VALUE>
</LOYALTY STATE RESTORE>

<LOYALTY END>
<LOYALTY END PRESENTATION>Loyalty Threshold Passed</LOYALTYEND
PRESENTATION>
</LOYALTY END>

<PRESENTATION END>
<PRESENTEND DELAY>10000<PRESENTEND DELAY>
<PRESENTEND CALL>10000<PRESENTEND CALL>
</PRESENTATION END>

</PROMOS GENERATOR INSTRUCTIONS>
```

*Fig. 21B*

# RETAIL TRANSACTION PROMOTION SYSTEM

## TECHNICAL FIELD

The present invention relates to point of sales systems for conducting retail transactions and, in particular, to a method and system for displaying and/or broadcasting promotional and informational messages to a customer during a retail transaction.

## BACKGROUND OF THE INVENTION

Point of sale ("POS") systems have been commonly implemented with proprietary cash register machines linked through a communications network to one or more backroom servers. Recent advances in computer hardware, manufacturing processes, operating systems, and software design methodologies have made possible new generations of POS systems based on personal computer ("PC") technologies. Both traditional POS systems and new generation PC-based POS systems provide both valuable information collection services and basic facilitation of retail transactions. However, POS systems currently provide relatively minimal feedback to the customer, generally a sales receipt and possibly display representation of a sales transaction, as discussed above. In some currently available POS systems, various advertisements and consumer information may be printed on the sales receipt or displayed on a auxiliary monitor or LED display. However, these currently available POS systems lack the capability of complex scripted tailoring of promotional information or advertisements to a particular customer within the context of the current retail transaction. Instead, advertisements and information are printed or displayed identically to each customer, on a random basis, or on the basis of simple item code matching. It would be desirable, for example, for a retail merchant to designate, within the POS system, particular promotional information tailored to particular customers based on the specific details of a retail transaction and on previously collected and processed information, including the loyalty information discussed above. Thus, purchase of a particular item by a particular customer might trigger an evaluation based on multiple variables within the transaction that leads to a special message or advertisement, including, for example, a discount or bonus computed from the evaluation. The need has therefore been recognized by retail merchants for POS systems with real-time, context driven promotional capabilities.

## SUMMARY OF THE INVENTION

The present invention provides an augmented POS system that includes capabilities for real-time displaying and broadcasting of commercial information within the context of a retail transaction. Each front-end POS system is augmented with an auxiliary display or combined display and audio broadcast device for presenting promotional information to a customer during the course of a retail transaction. The auxiliary display device displays and may broadcast output of a web browser. A software messenger component resides within the front-end POS system in order to accept events from a POS system that are recognized by the POS system during the retail transaction. The messenger component translates the events into generalized messages that are queued to a message queuing component. The generalized messages are dequeued from the message queuing component by a generating component that generates web pages. The generated web pages are made available to a web server that provides web pages to the web browser for display on the auxiliary display device included in the front-end POS system. The augmented POS system can thus, in real-time, display web pages via the web browser generated in response to events that occur during the retail transaction. The net result is the real-time display to a customer of specific information tailored to that customer in the context of the retail transaction.



## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** illustrates a newer-generation POS system.

FIG. **2** illustrates an example sales receipt and/or monitor display corresponding to an example retail transaction.

FIG. **3** is a high-level flow control diagram for the program "Sales Transaction" that represents a front-end POS application program.

FIG. **4** is a flow control diagram for the routine "Scan Items."

FIG. **5** is a flow control diagram for the routine "Receive Payment."

FIG. **6** displays one embodiment of the promotional retailing system.

FIGS. **7–14** illustrate the retail transaction of FIG. **2** conducted on a promotional retailing system.

FIG. **15** is a high-level architectural block diagram of the software components, and the interactions between the software components, of the promotional retailing system.

FIGS. **16–18** illustrate different possible hardware configurations on which the various components of the promotional retailing system, shown in FIG. **15**, can run.

FIG. **19** is a flow control diagram describing operation of the promotional retailing system messenger.

FIG. **20** is a flow control diagram of the promotional retailing system generator software component.

FIGS. **21A–21B** illustrate an example script run by the promotional retailing system generator.

## DETAILED DESCRIPTION OF THE INVENTION

The present invention provides an augmented POS system, or promotional retailing system ("PRS"), that provides real-time display, and that may also provide audio broadcast, of promotional information to a customer during a retail transaction. A number of different components are embedded within a POS system in order to produce the PRS. A messenger component is embedded within the front-end POS system in order to collect the events generated by the POS system, translate those events into generalized messages, and queue the generalized messages to a message queuing system, generally provided by a standard operating system within the front-end POS system or within one or more backroom servers. A generator component runs either on the POS system, a backroom server, or perhaps an additional computer, to dequeue the generalized messages from the queuing system, produce web pages corresponding to the generalized messages, and provide those web pages to a web server. A specialized web browser component displays and perhaps broadcasts the web pages on an auxiliary display and broadcast device to a retail customer. This system thus provides real-time promotional information to the retail customer during the course of a retail transaction that can be specifically tailored to the customer within the context of the retail transaction.

FIG. **1** illustrates a newer-generation POS system. The front-end portion of the POS system comprises a PC **102** or

similar computer system that includes a display monitor **104** and one or more input devices, such as a keyboard **106**. The front-end POS system also includes a cash drawer component **108** similar to the cash drawer of a cash register machine. The cash drawer is activated by a front-end POS application program running on the PC **102**. The front-end POS system further includes a printing device **110** that prints out a sales receipt at the end of a transaction. The front-end POS system is intended for use at each check out counter **111** or similar retail transaction station within a retail sales establishment.

The front-end POS system essentially serves the purpose of a traditional cash register machine. A sales clerk scans items to be purchased using an optical scanner **112** or, alternatively, the keyboard **106** or another input device. The front-end application program running on the PC **102** correlates scanned product identifiers, such as barcodes, with entries within a file or database that describes each product. Such entries may include a text description of the product, the price of one unit in which the product is sold, information as to whether the product should be taxed upon sale, and additional information useful for ordering, inventory control, and other operational and management tasks conducted either by the retail establishment or by a computer system located in a remote home office. As the items are scanned, a list of items is displayed on the display monitor **104** along with prices and running totals, or, in other words, cumulative charges for the transaction. The front-end POS system is additionally linked by a computer network to one or more backroom server computers **114**. The backroom server computer is commonly linked via a telecommunications link **116** or a wide area network ("WAN") to computer systems that reside in a remote home office or a remote regional office. The backroom server computer **114** contains the management and control software that collects transaction information from front-end POS systems, processes the collected information, and both carries out management and maintenance tasks for the retail establishment as well as sending certain of the collected and processed information via the telecommunications link **116** to a remote computer system. The backroom server often, for example, conducts inventory control for the retail establishment, automated accounting, and, in addition, conducts statistical analysis or dynamic analysis of the flow of retail transactions. A remote computer system in a remote office may conduct similar management and maintenance tasks on a company-wide basis, including ordering and arranging for distribution of products to replenish stocks in the retail establishments.

FIG. **2** illustrates an example sales receipt that may, in addition, be displayed on a monitor, corresponding to an example retail transaction. The sales receipt may include a header **202** specific to the retail establishment, a date **204** and time **206** of the retail transaction represented by the receipt, and a graphic image, promotional message, or other types of advertising **208**. Traditionally, the sales receipt includes an itemized list of the items purchased during the transaction **210** with columns that commonly include a text description of each item purchased **212**, the quantity of each item purchased **214**, an indication of whether the purchase of the item is taxable **216**, and a price corresponding to the quantity of items purchased multiplied by the price of the basic unit of sale of the item **218**. In addition, the sales receipt commonly includes various subtotals and a total price for the retail transaction **222**. A printed sales receipt may differ in format and content from the display produced by the display monitor of the front-end POS system (**104** in FIG. **1**).

FIGS. **3–5** are flow control diagrams for a front-end application program running on the PC (**102** in FIG. **1**) of a front-end POS system. FIG. **3** is a highlevel flow control diagram for the program "Sales Transaction" that represents a front-end POS application program. In step **302**, the program receives an identification of the customer for whom the retail transaction will be conducted. The customer identification may be scanned from a membership card or keyed in by a sales clerk according to input from a customer. The program "Sales Transaction" then, in step **304**, transmits the customer identification and an indication of the start of a retail transaction to the backroom server computer (**114** in FIG. **1**). In step **306**, Sales Transaction receives certain information from the backroom server related to the customer, including what is commonly referred to as loyalty information. This loyalty information may include such information as the number of bonus points that the customer has accrued by shopping at the retail establishment, indications of products that the customer has purchased recently in sufficient quantity to qualify for discounts or accelerated bonus points, and any other information pertaining to the customer. In step **308**, Sales Transaction calls the routine "Scan Items" to process the scanning of all the items being purchased by the customer. When scanning of the items is complete, Sales Transaction, in step **310**, displays a final list of items on a display monitor (**104** in FIG. **1**) and then, in step **312**, calls the routine "Receive Payment" to process the payment by the customer for the items in the transaction. Following the payment, Sales Transaction waits, in step **314**, for input from the sales clerk indicating that the transaction is complete. When the sales clerk indicates the end of the transaction, then Sales Transaction, in step **316**, sends a list of the items purchased in the transaction, along with payment information, to the backroom server and prints out a sales receipt on the printing device (**110** in FIG. **1**) of the front-end POS system. If input other than an indication of the end of the transaction is received by Sales Transaction following step **314**, Sales Transaction returns to step **308** to continue scanning items and processing the transaction.

FIG. **4** is a flow control diagram for the routine "Scan Items." In step **402**, Scan Items waits for input from the scanning device or keyboard (**112** and **106** in FIG. **1**, respectively). When input is provided, Scan Items determines, in step **404**, whether the input represents an identification of a product. If product identification has not been input, then, in step **406**, Scan Items determines whether an end-of-scan indication has been input by the sales clerk. If so, Scan Items returns, in step **408**. Otherwise, Scan Items returns to step **402** to wait for correct input. If a product identification was detected in step **404**, Scan Items uses the product identification number, in step **406**, to look up a file or database entry that describes the product. Then, using this information, Scan Items, in step **408**, determines the quantity and total price for the scanned items.

There are numerous reasons that a sales clerk may have scanned an item. For instance, the customer may simply have requested that the sales clerk provide the customer with the price. Alternatively, the sales clerk may scan the item in order to delete the item from the transaction when a customer changes his or her mind after the product was initially scanned. Finally, the sales clerk may scan the product in order to add the product to the retail transaction.

Along with the product identification, the input received in step **402** additionally contains an indication of the reason for the scan. For example, the sales clerk may depress a button on the scanner (**112** in FIG. **1**) or input information as to the nature of the scan via the keyboard (**106** in FIG. **1**).

In step **410**, Scan Items determines whether the scan was made to display the price to the customer. If so, then, in step **412**, Scan Items displays the price and returns to step **402** to wait for further input. Otherwise, in step **414**, Scan Items determines whether the scan was conducted in order to add the item to the retail transaction. If so, then in step **416**, Scan Items adds the description of the item retrieved into **406** to a list of items that represents the retail transaction and updates any running totals for the retail transaction and then, in step **418**, updates the display representing the retail transaction that is displayed on the display monitor (**104** in FIG. **1**) and then returns to step **402** to wait farther input. Otherwise, in step **420**, Scan Items determines whether the scan was conducted in order to delete, or void, the item from the retail transaction. If so, then, in step **422**, Scan Items deletes the description of the item retrieved in step **406** from the list of items that represents the retail transaction, updates the display in step **418**, and returns to step **402** to await further input. Otherwise, Scan Items returns directly to step **402** to await for correct input.

FIG. **5** is a flow control diagram for the routine "Receive Payment." In step **502**, Receive Payment waits for an indication from the sales clerk, from a card reading machine, or from some other input machine, for an indication of the amount of payment, the type of payment, and possible additional account information. In step **504**, Receive Payment determines whether the customer is paying by credit card. If so, then Receive Payment, in step **506**, connects a transaction with a bank or credit card service provider to transfer funds and record the retail transaction, and then proceeds to step **518**, to be discussed below. Otherwise, in step **508**, Receive Payment determines whether the customer is paying by check. If so, then in step **510**, Receive Payment, according to information input by a check reading device or via keyboard entry by the sales clerk, verifies the customer's checking account and determines the amount of the check, and then proceeds to step **518**, to be discussed below. Otherwise, in step **512**, Receive Payment determines whether a customer has paid in cash. If so, then, in step **514**, Receive Payment determines the amount of cash based on an indication by the sales clerk, and proceeds to step **518**, to be discussed below. Otherwise, in step **516**, Receive Payment displays an error and returns to step **502**. In step **518**, Receive Payment displays on the display monitor (**104** in FIG. **1**) the amount of payment made by the customer and perhaps other information concerning the payment. In step **520**, Receive Payment determines whether, based on the payment received, change or cash must be returned to the customer. If so, then, in step **522**, Receive Payment displays the amount of money to be returned to the customer. Finally, in step **524**, Receive Payment returns.

Of course, there are many additional details that need to be handled by the front-end POS system not illustrated in FIGS. **3–5**. For example, in FIG. **3**, a provision may be made for a customer to change his or her mind following scanning of the items and abort the retail transaction. Thus, provision for additional types of input in the Scan Items routine or in the Sales Transaction program might be made to detect such a desire to abort the retail transaction. FIGS. **3–5** are intended to illustrate the general operation of front-end POS application programs. There are many alternative ways to implement such an application program, and many additional features that might be included. Various steps in FIGS. **3–5** are labeled with a letter "E" within a circle, such as step **302** in FIG. **3**. This labeling indicates that the step represents an event that might trigger some further activity within the POS system, as will be discussed below with regard to implementation of the present invention.

FIG. **6** displays one embodiment of the PRS. This PRS is based on the newer-generation POS system displayed in FIG. **1**. All but one component of the PRS are identical to components of the newer-generation POS system of FIG. **1** and, in the interest of brevity, will be labeled with the same labels as used in FIG. **1**. The above discussion of these components will not be repeated.

The PRS **600** includes an auxiliary display device **602** that includes a visual display device and that may include audio speakers for broadcast of audio information. The PRS components of the described embodiment are written to generalized interfaces enabling any number of a variety of different display and broadcast devices to be employed. The auxiliary display and broadcast device **602** is coupled to the PC **102** and is driven by a specialized web browser, or PRS browser, running on the front-end POS system PC **102**. In alternate embodiments, an additional computer system might be provided to drive the auxiliary display device **602**, or the display device might be driven from the backroom server **114**. The messenger and generator components may run on the PC **102**, or one or both of the generators and messenger components may run on the backroom server.

The methods of the present invention can be used to augment any POS system to produce the PRS. Although the discussion will focus primarily on an embodiment of a PRS based on a newer-generation POS, traditional proprietary POS systems can also be augmented to provide real-time display and broadcast of promotional material to a customer within the context of a retail transaction. Implementation details of the messenger component and generator component may differ depending on the type of POS being augmented, as will be discussed below, but object-oriented technologies are employed to isolate and minimize such differences, where possible. Augmentation of any existing POS system to provide a PRS by the methods of the current invention does not require any proprietary, single-use hardware devices. Instead, augmentation of an existing POS system requires standard display devices, and possibly standard audio broadcast devices, and a number of software components, including the PRS messenger, the PRS generator, a web server, standard message queuing facilities and information transfer protocols.

FIGS. **7–14** illustrate the retail transaction of FIG. **2** conducted on a PRS system. FIGS. **7–14** will be discussed with references to the various events indicated in FIGS. **3–5** by labels comprising the letter "E" within a circle. FIGS. **7–14** each show the appearance of the auxiliary display monitor (**602** in FIG. **6**) at a given instant in time as produced by the PRS web server.

FIG. **7** illustrates the output displayed on the auxiliary display monitor during the initiation of the retail transaction. After the customer has produced a membership card or otherwise indicated the customer's identification to the sales clerk, and that customer identification has been received by the program "Sales Transaction" in step **302** of FIG. **3**, Sales Transaction generates an event indicating the reception of the customer identification, and possibly the name of the customer, and passes that event to the PRS messenger. The PRS messenger queues the event which is, in turn, dequeued by the PRS generator in order to generate a hypertext markup language ("HTML") or dynamic HTML ("dHTML") file that describes the output for the auxiliary display device, illustrated in FIG. **7**. Thus, if the customer name is available on the membership card, the PRS is able to generate and display a welcome message specifically tailored to the customer **702** and an initially blank item list **704**. When Sales Transaction receives the loyalty informa-

tion corresponding to the identified customer, in step **306** of FIG. **3**, another event may be generated. In response to this event, the PRS may display information about "F" bonus points accrued by the customer and discounts on particular products, or types if of products, available to the customer based on previous purchases. The display output that results from the event generated by the reception of loyalty information as shown in FIG. **8**.

Once the retail transaction has been initiated, the sales clerk begins scanning individual products brought to the retail sales station by the customer. The scanning of the products, controlled by the routine "Scan Items" in FIG. **4**, may generate a variety of different events, including events corresponding to steps **408**, **412**, **416** and **422** of FIG. **4**. For example, the sales clerk might first scan a one-half gallon container of ice cream and then indicate, via a push button or keyboard entry, that there are **3** additional identical items being purchased by the customer. In response to input by the sales clerk and the scanning of the barcode on the side of the ice cream carton by the scanning device (**110** in FIG. **1**), Scan Items generates an event corresponding to step **416** of FIG. **4**, in which the ice cream is added to the list of items representing the retail transaction. In response to that event, the PRS may generate certain promotional or product information based on the identity of the item and quantity added to the retail transaction. For example, the PRS may be configured to recognize the purchase of a relatively large quantity of a small size of a particular product in order to display an informational message to the customer indicating the availability of larger sizes of that product. For example, as illustrated in FIG. **9**, the PRS indicates to the customer that ice cream is available in one, two and ten gallon sizes **902**, as well as display an image **904** of these larger size containers. Note that any type of display object, including bit map representations of static images or representations of video clips, music, or other dynamic media can be displayed by the PRS web browser.

The event generated in step **416** of FIG. **4** corresponding to the addition of the ice cream to the list of items represented in the retail transaction also enables the PRS to add an entry for the ice cream to the display of the transaction **906** and to display running totals of taxable and nontaxable items, as well as a aggregate running total of the price of the transaction **908**.

The customer may have brought an item to the sales counter in order to simply inquire about the price. When the item is scanned to display the price, an event is passed from step **412** of Scan Items to the PRS messenger, ultimately resulting in the display of price information, as shown in FIG. **10**. In this case, not only the price of the item **1002** is displayed, but also additional promotional information **1004** indicating the comparative savings available by purchasing this particular item rather than a similar item of a different brand, as well as an image of the item **1006** and a short video clip **1008** showing a satisfied consumer consuming the item.

The PRS system may display informational messages, in addition to merely promotional messages. For example, in response to the addition of the next product to the retail transaction, the PRS system may generate consumer information related to that product that might be of interest to the customer, as shown in FIG. **11**.

In addition to promotional and consumer information, the PRS system may also display information concerning discounts or special prices that become available to the customer upon the scanning and adding to the retail list of a particular item. For example, FIG. **12** illustrates the PRS display of discount information **1202** based on the customer's purchase of chocolate truffles **1204**.

Once all of the products have been scanned, with intended display of promotional and informational information by the PRS, the sales clerk requests and receives payment for the transaction, as controlled by the routine "Receive Payment" shown in FIG. **5**. This routine may also generate numerous different events. For example, the customer may pay for the purchase using a charge card. The charge card transaction, in step **506** in FIG. **5**, generates an event leading to the display illustrated in FIG. **13**. In this case, extra bonus points were received by the customer because the customer paid for the purchase using an ACME charge card. Both the extra bonus points **1302** and an image of an ACME charge card **1304** are displayed by the auxiliary monitor.

Finally, when the transaction is complete, as detected by Sales Transaction in step **316** in FIG. **3**, the PRS may present a final display to the customer that includes promotional information, or other information, based on the entire transaction as well as the customer's previous transactions. For example, in FIG. **14**, the PRS indicates the total number of bonus points accumulated by the customer **1402**, the number of bonus points required by the customer to receive a prize or discount **1404**, a list of the prizes for which the customer will qualify **1406**, and perhaps a promotional message triggered by the types of items purchased by the customer during the retail transaction **1408**.

Of course, each different POS system will employ a variety of different types of front-end POS application programs that may each generate different types of events. These events can be interpreted and translated by the PRS system to display any number of different types of information. If the customer is purchasing children's videos, for example, the PRS system might display a portion of that video on the auxiliary display monitor to entertain the customer's restless children, who might otherwise occupy themselves by grabbing items from candy and magazine displays adjacent to the sales counter. As web browser technology encompasses additional new types of presentation capabilities, the PRS web browser may, in turn, provide increased capabilities for display, including perhaps three dimensional dynamic graphical displays, surround-sound stereo, or other types of media not yet developed. Even employing those types of media currently available for display by web browsers, the PRS provides a rich medium for displaying a virtually endless number of different types of promotional and informational messages.

FIG. **15** is a high-level architectural block diagram of the software components, and the interactions between the software components, that implement a PRS. The PRS includes a standard, currently-available POS system ruining a POS application program **1502**. The POS system exchanges events with a PRS messenger **1504**. The PRS messenger is an object, in the object-oriented programming sense of the word "object," that provides an exposed interface to the POS system for collecting events. The PRS messenger **1504** packages the events received from the POS system **1502** into messages that the PRS messenger **1504** queues to a message queue **1506**. The message queue used in the PRS may be any number of different message queuing facilities provided by operating system vendors, such as IBM's MQSeries and Microsoft's MSMQ. The PRS generator **1508** dequeues messages from the message queue **1506**, prepares HTML or dHTML files in response to those messages, and makes the HTML or dHTML files available to a web server **1510**. The PRS generator **1508** extracts various types of display or broadcast objects from a display object database **1512** to

include in dHTML files. A dHTML engine **1514** prepares the dHTML files with references to the display objects from the display object database **1512** to be included in the image represented by the file. The PRS generator thus translates each different message dequeued from the message queue **1506** into one or more web pages, defined by one or more HTML or dHTML files.

The PRS generator is controlled by high-level script programs that are prepared to handle the different types of messages generated by the POS system **1502**. A number of different types of scripting languages can be employed to control the PRS generator, including Microsoft's VB Script and Sun's Java Script. The PRS generator sends indications to the web server **1510** of the HTML and dHTML files generated in response to messages so that the web server **1510** can make the web pages corresponding to the messages available to the PRS browser **1516** that displays the web pages on the auxiliary display device.

In a preferred embodiment, the messages are encapsulated in extensible r markup language ("XML") data packages. XML data packages are self-describing, so that, for example, a recipient of an XML data package can employ standard XML functionality to unpackage the contents of the XML data package into discrete values having standard data types. It is important to note that the PRS is, in this embodiment, implemented mostly from existing components, including the POS system **1502**, the message queuing facility **1506**, the web server **1510**, and the dHTML engine **1514**. The display object database **1512** may be created using a standard database management system ("DBMS"), an object-oriented database system ("OODB"), or a similar type of information storage paradigm. The scripts that control the PRS generator can be developed using any number of different integrated development environments ("IDE") or commonly available script generators. By this design and methodology, inflexible proprietary components are avoided. Using standardized, pre-existing components vastly increases the flexibility for modifying and augmenting the PRS as well as the portability of the methodologies towards different existing POS systems, and results in lower system costs.

FIGS. **16–18** illustrate different possible hardware configurations on which the various components of the PRS, shown in FIG. **15**, can run. For example, in FIG. **16**, the POS system **1502**, the PRS messenger **1504**, and the PRS browser **1506** all run within the computing engine of the existing POS system **1602**. The remaining components run on a backroom server **1604** interconnected with the POS computational engine **1602** via communications links or a network. By contrast, in FIG. **17**, all the components of the PRS, with the exception of the web server **1510**, run within the computational engine of the front-end POS system **1702** while the web server **1510** runs on the backroom server **1704**. In yet another implementation, illustrated in FIG. **18**, the PRS messenger **1504** runs within a computational engine of the POS system **1802**, the web server **1610** runs a backroom server **1804**, and the remaining components run within a third computer system **1806** added to the front-end POS system in order to operate the auxiliary display device and provide a suitable environment for the PRS generator.

It should be noted that a retailer may generate a significant amount of revenue by providing promotional displays to vendors of the products that the retailer sells. For example, the retailer may agree to display promotional information about a manufacturer's product line whenever a customer purchases one product manufactured by the manufacturer. Thus, not only can a retailer enhance a customer's shopping experience and inform the customer of opportunities and products for sale within the retail store, but also can generate direct revenues by selling advertising space to advertisers. It is important for advertisers to be able to verify that the advertisements are actually being displayed to customers. This verification can be provided in the form encrypted data transmitted to the advertiser from authenticated sources or, in other words, from known locations. Thus, for example, each time an advertisement is displayed, the PRS may generate an encrypted message including authentication information that is sent via the backroom server computer **114** in FIG. **6** directly to the advertiser's computer system.

FIG. **19** is a flow control diagram describing operation of the PRS messenger. The PRS messenger is a software routine or object-oriented programming language object that is incorporated into the existing front-end POS application program. The front-end POS application program first calls a PRS messenger routine, in step **1902**, to notify the PRS messenger of the occurrence of a new event, passing the name of the event to a PRS messenger. Then, the front-end POS application program passes to the PRS messenger a number of data elements associated with the event that has occurred. The PRS messenger receives those data elements in the for loop comprising steps **1904**, **1906**, and **1908**. First, in step **1904**, the PRS messenger receives a next PRS messenger method indication. In step **1906**, the PRS messenger determines whether the method indication is intended for posting of a data element associated with the event to the PRS messenger. If so, then the PRS messenger, in step **1908**, receives from the front-end POS application program a name, data type, and value for the data element and stores it in memory. Control then flows back to step **1904** where the PRS messenger is placed to receive a subsequent data element. If no data element was posted in step **1906**, then the PRS messenger has received an end of data element indication from the front-end application program and proceeds to process the event and data elements. In step **1910**, the PRS messenger consults a transformation map to possibly transform the name of the event, or the name, data type, or value of any of the data elements associated with the event. Once any transformations have been performed, the PRS messenger packages the event name and data elements together into an XML file in step **1912**. In alternative embodiments, a data encapsulation protocol other than XML can be employed. For example, in place of the XML encapsulation method and message queuing facility (**1506** in FIG. **15**), a remote procedure call ("RPC") facility can be employed to package and transport the event name and data element associated with the event to the PRS generator (**1508** in FIG. **15**). Finally, in step **1914**, the XML file or, in other words, the message, produced by the PRS messenger is sent by the PRS messenger to the message queuing facility (**1506** in FIG. **15**).

FIG. **20** is a flow control diagram of the PRS generator software component. The PRS generator is a process that runs on the computational engine of the front-end POS system, on a backroom server, or possibly on an additional computer within the PRS system. In step **2002**, the PRS generator waits for notification of a next message available from the message queuing facility (**1506** in FIG. **15**). When another message has arrived, then, in step **2004**, PRS generator acquires the message from the message queuing facility. In step **2006**, the PRS generator parses the XML file corresponding to the retrieved message to produce a parse tree representation of the contents of the XML file. Note that such a parse tree includes data elements, the name of the event, and any other information that was associated with

the event and packaged in the message by the PRS messenger. In the outer loop comprising steps **2008**, **2010**, **2012**, **2014**, **2016**, and **2018**, PRS generator traverses the parse tree in some predetermined order. If another parse tree node is discovered during the traversal, as determined by PRS generator in step **2010**, then the inner loop comprising steps **2012**, **2013**, **2014**, **2016**, and **2018**, is executed by PRS generator in order to run scripts triggered by the contents of the parse tree node. In step **2012**, the PRS generator begins a for loop in which each script is considered. In step **2013**, the PRS generator determines whether there are more scripts to consider in the for loop. If not, then control flows back to step **2008** where the next parse tree node is selected and considered in the outer loop. If another script should be considered, then PRS generator, in step **2014**, determines whether the contents of the selected parse tree node triggers the selected script. If not, then control flows back to step **2012**, where the next script is selected for consideration. Otherwise, the script triggered by the parse tree node is run. Running of the script may cause the PRS generator to access the display object database (**1512** in FIG. **15**), to invoke the dHTML engine (**1514** in FIG. **15**), to run other programs, to communicate with a remote computer via a WAN or network, and do any other types of operations necessary to prepare one or more HTML or dHTML files that describe the promotional informational display that would be displayed to a customer in response to the occurrence of an event in the POS system that elicited the message currently being processed by the PRS generator. In step **2018**, the PRS generator determines whether the script has indicated that no further scripts be considered. If so, control flows back to step **2008** where the next parse tree node is selected. Otherwise, flow controls back to step **2012** where the next script will be selected and considered by the PRS generator. When the nodes of the parse tree have all been traversed, the PRS generator in step **2020** sends all the HTML and dHTML files that have been prepared via running of the script for the currently processed message to the web server (**1510** in FIG. **15**). The web server then interacts with the PRS browser (**1516** in FIG. **15**) to display a promotional informational message to the customer.

FIGS. **21A–21B** illustrate an example script run by the PRS generator. A script may include various tags, such as the tag "BANNER" **2102**, references to other scripts such as the reference to "Transaction Presentation Banner" **2104**, references to display objects, such as "http:/www.server.com/freeprnt.swf" **2106**, and references to programs, such as the program designated by the string "http://www.server.com/dSIGN" **2108**. Each tag, such as tag **2102**, is followed with a balancing end tag, such as the end tag "/BANNER" **2110**. The tags introduce sections of a script that correspond to various different aspects of a promotional or informational message, criteria for invoking the script, and various PRS constructs that represent complex interactions between various PRS components. For example, the tag "SCRIPT" **2112** contains conditional logic that specifies that when a XML message contains a universal price code ("UPC") equal to the number 1234567890, the script should be triggered for execution by the PRS generator to carry out the actions specified within the script. One such action, for example, is to display a banner within the banner region on the display monitor that is specified in the script "Transaction Presentation Banner," as specified in the line introduced by the "BANNER" tag **2102**.

The various PRS components can be implemented in many different types of languages for execution on a variety of different kinds of hardware platforms. A number of different types of scripting languages can be devised to specify the construction of promotional and informational messages to be displayed to a customer. For example, common JAVA script parsers may be employed. A large variety of different capabilities can be offered by the script language. For example, inclusion of any number of different types of display and broadcast objects, including dynamic multimedia objects, such as video clips, or audio wave files. Different web browsers, web servers, and internal communication mechanisms might be used.

Although the above described embodiment, as illustrated in FIG. **15** was described in terms of events being generated on the POS system **1502**, passed to the PRS messenger **1504**, translated by the PRS messenger **1504** into XML messages that are passed to the PRS generator **1508** to specify creation of HTML files describing promotional informational displays to be displayed to a customer via the PRS browser **1516**, it should be noted that the arrows in FIG. **15** are by-directional. If the display monitor on which the promotional and informational messages are displayed incorporates a touch-screen capability, then touch-screen events may be transmitted from the PRS browser **1516** in a reverse direction back to the POS system **1502**. This would allow, for example, a customer to select options from a display menu to affect subsequent events within a retail transaction.

The embodiment described above is tailored to use within retailing systems in order to facilitate retail transactions. Such systems may include traditional checkout counter systems, as described above, or various other retailing systems, including electronic commerce systems. However, the methodologies of the current invention can be employed in a variety of other systems and settings. For example, these methodologies can be used to augment current kiosk systems to produce more elaborate real-time display of information to a user. In fact, these methodologies could be employed in almost any system in which information is presented to a person run automated system. Examples include computerized systems for displaying control information, such as modern avionics systems, machinery control systems, monitoring systems, and other complex computer-controlled digital display systems.

It is intended that the scope of the invention be defined by the following claims and their equivalents:

What is claimed is:

**1**. A method for augmenting a point of sale system to provide multi-media promotional and informational displays to a customer during a retail transaction that are based on the context of the retail transaction, the method comprising:

augmenting a front-end point of sale system to include a multi-media display device for displaying promotional and informational displays to the customer;

including a messenger component within the front-end point of sale system to receive real-time notification of events detected by the front-end point of sale system during the course of a retail transaction, translate the events into messages, and make the messages available for processing by other components the point of sale system passing said events to the messenger component by passing the name of said events and data elements associated with said events and the messenger component transforming said events name and data elements according to a transformation map and packaging the transformed said events name and data elements into a self-describing data encapsulation object,

including a generator component within the point of sale system to process messages made available by the

messenger component to produce descriptions of visual displays corresponding to the promotional and informational displays;

including a display component within the point of sale system that receives the descriptions of visual displays produced by the generator component and displays to the customer the corresponding promotional and informational displays on the multi-media display device; and

during the course of the retail transaction,

receiving notifications of events detected by the front-end point of sale system;

translating the events into messages;

producing descriptions of visual displays corresponding to the messages; and

displaying promotional and informational multi-media displays to the customer on the multi-media display device according to the descriptions of visual displays corresponding to messages representing the translation of events detected by the front-end point of sale system.

**2**. The method of claim 1 further including parsing messages by the generator component and running scripts by the generator component that specify production of the descriptions of visual displays.

**3**. The method of claim 1 wherein the messenger component makes messages available to the generator component by passing the messages to a message queuing facility and wherein the generator component receives messages from the message queuing facility.

**4**. The method of claim **1** wherein the display component includes a web server and a web browser, and wherein the descriptions of visual displays are hypertext markup language documents or dynamic hypertext markup language documents.

**5**. The method of claim **1** wherein the promotional and informational messages may include various types of multimedia presentation objects, including video clips, still images, spoken text, printed text, and music.

**6**. An enhanced point of sale system that provides multimedia promotional and informational displays to a customer during a retail transaction that are based on the context of the retail transaction, the system including:

a front-end point of sale system that includes a multimedia display device for displaying promotional and informational displays to the customer;

a messenger component within the front-end point of sale system to receive real-time notification of events detected by the front-end point of sale system during the course of a retail transaction, translate the events into messages, and make the messages available for processing by other components the point of sale system passing said events to the messenger component by passing the name of said events and data elements associated with said events and the messenger component transforming said events name and data elements according to a transformation map and packaging the transformed said events name and data elements into a self-describing data encapsulation object,

a generator component within the point of sale system to process messages made available by the messenger component to produce descriptions of visual displays corresponding to the promotional and informational displays; and

a display component within the point of sale system that receives the descriptions of visual displays produced by the generator component and displays to the customer the corresponding promotional and informational displays on the multi-media display device.

**7**. The system of claim **6** wherein the messenger component passes messages to the generator component via a message queuing facility.

**8**. The system of claim **7** wherein the generator component executes scripts that are triggered by data values included in the messages, the scripts specifying various operations and tasks required to prepare the descriptions of visual displays, including running programs, accessing databases containing display objects to be included in the visual displays, invoking dynamic hypertext markup language engines for preparing dynamic hypertext markup language files, and invoking other scripts.

**9**. The system of claim **7** wherein the display component includes a web server and a web browser for display of hypertext markup language files and dynamic hypertext markup language files.

**10**. The system of claim **7** wherein the display component includes a touch screen for receiving customer responses and indications and wherein the customer responses and indications are passed from the display component back to the generator component which then passes messages containing the responses and indications back to the messenger component, the messenger component then generating events corresponding to the responses and indications and passing those events to the front-end point of sale system.

**11**. The system of claim **7** wherein the generator component tracks the display of different visual displays and reports the number of times certain visual displays are displayed via a network or telecommunications link to a remote computer.

* * * * *

US006009412A

# United States Patent [19]

Storey

[11] Patent Number: 6,009,412

[45] Date of Patent: *Dec. 28, 1999

[54] **FULLY INTEGRATED ON-LINE INTERACTIVE FREQUENCY AND AWARD REDEMPTION PROGRAM**

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[73] Assignee: **Netcentives, Inc.**, San Francisco, Calif.

[*] Notice: This patent is subject to a terminal disclaimer.

[21] Appl. No.: **09/105,227**

[22] Filed: **Jun. 25, 1998**

**Related U.S. Application Data**

[63] Continuation of application No. 08/572,017, Dec. 14, 1995, Pat. No. 5,774,870.

[51] **Int. Cl.**[6] ..... **G06F 7/00**

[52] **U.S. Cl.** ..... **705/14**; 705/17; 705/26; 705/27

[58] **Field of Search** ..... 705/14, 17

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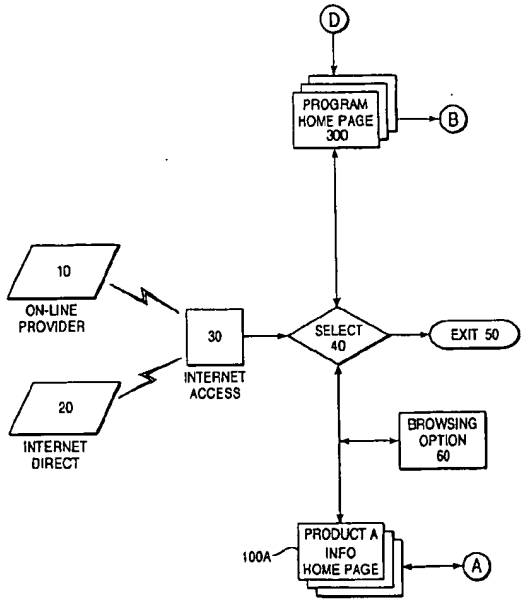
*Attorney, Agent, or Firm*—Philip H. Albert; Townsend and Townsend and Crew

[57] **ABSTRACT**

An fully integrated on-line frequency award program is disclosed. A user may access the program on-line and may browse a product catalog for shopping. The user may electronically place an order, upon which the program automatically checks the user's credit and electronically issues a purchase order to the supplying company. The program also calculates award points, updates the award account of enrolled users, and communicates that number of awarded points to the user. Enrolled users may browse through an award catalog and electronically redeem an amount of awarded points towards an award. The program then electronically places an award redeeming order with the fulfillment house and updates the user's award account.

**36 Claims, 6 Drawing Sheets**



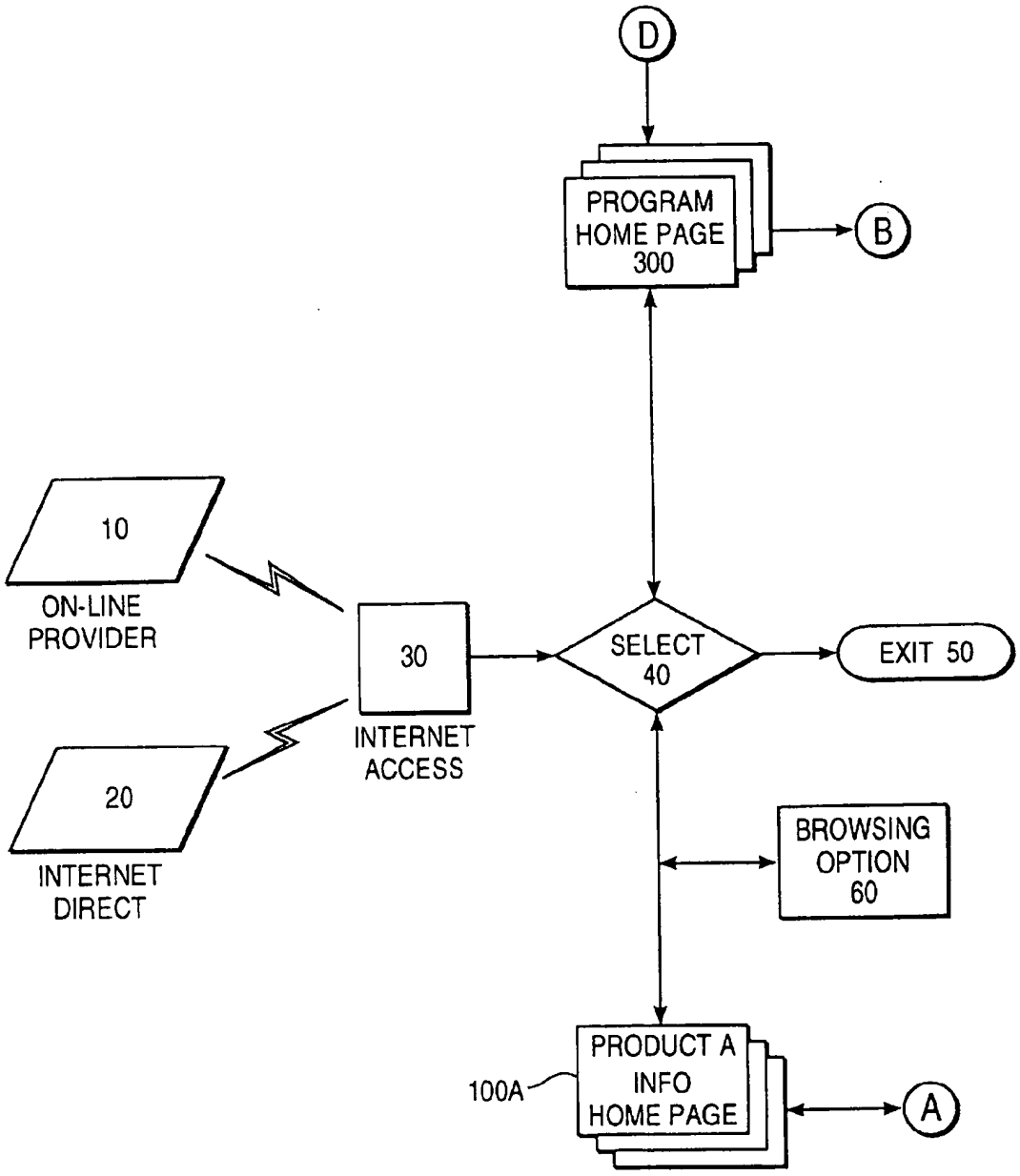

D
PROGRAM HOME PAGE 300
B
10
ON-LINE PROVIDER
30
INTERNET ACCESS
SELECT 40
EXIT 50
20
INTERNET DIRECT
BROWSING OPTION 60
100A
PRODUCT A INFO HOME PAGE
A

Fig. 1

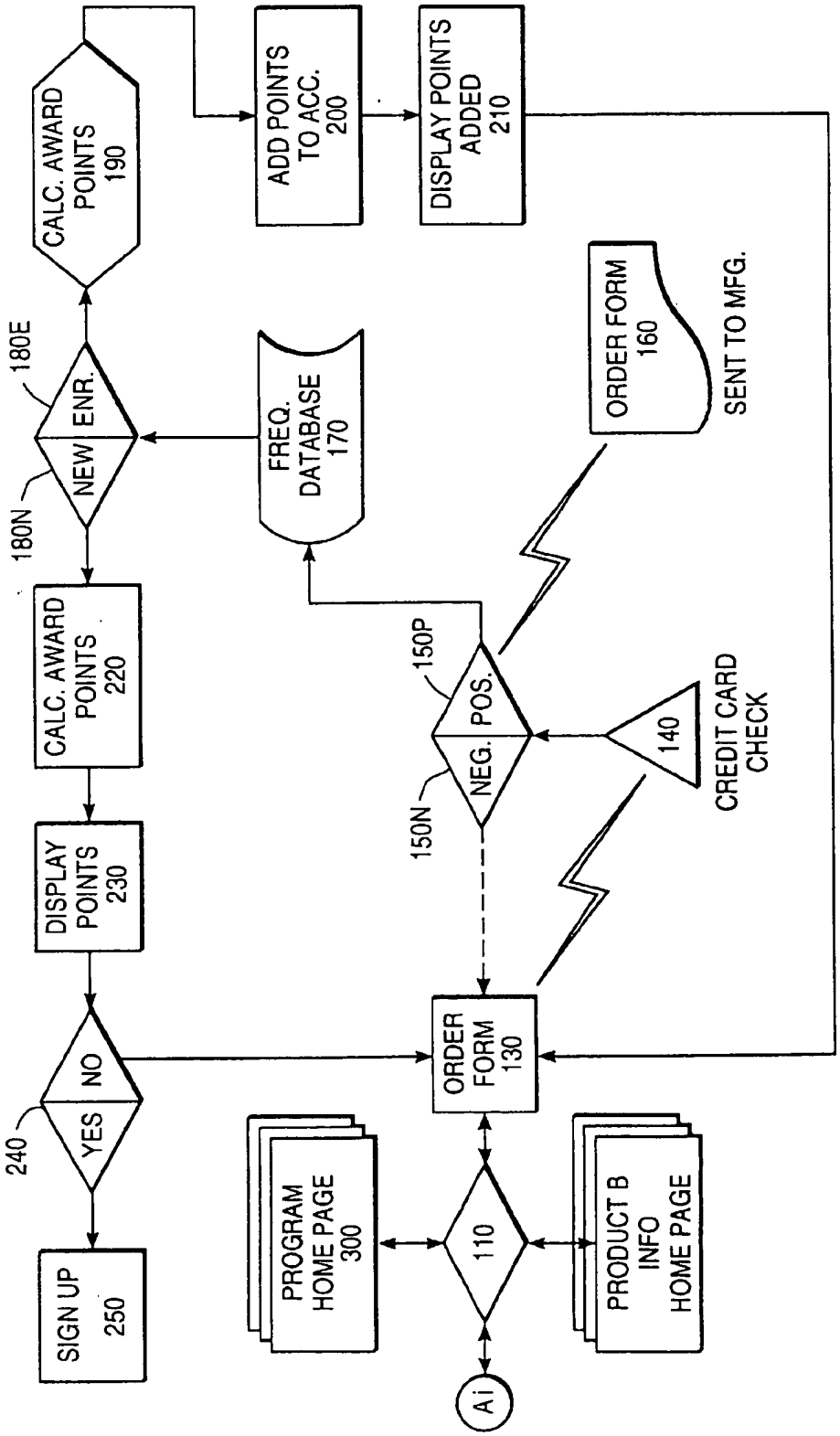

CALC. AWARD POINTS 190
ADD POINTS TO ACC. 200
DISPLAY POINTS ADDED 210
180E
ENR.
NEW
180N
FREQ. DATABASE 170
ORDER FORM 160
SENT TO MFG.
CALC. AWARD POINTS 220
150P
POS.
NEG.
150N
140
CREDIT CARD CHECK
DISPLAY POINTS 230
NO
YES
240
ORDER FORM 130
SIGN UP 250
PROGRAM HOME PAGE 300
110
PRODUCT B INFO HOME PAGE
Ai

Fig. 2

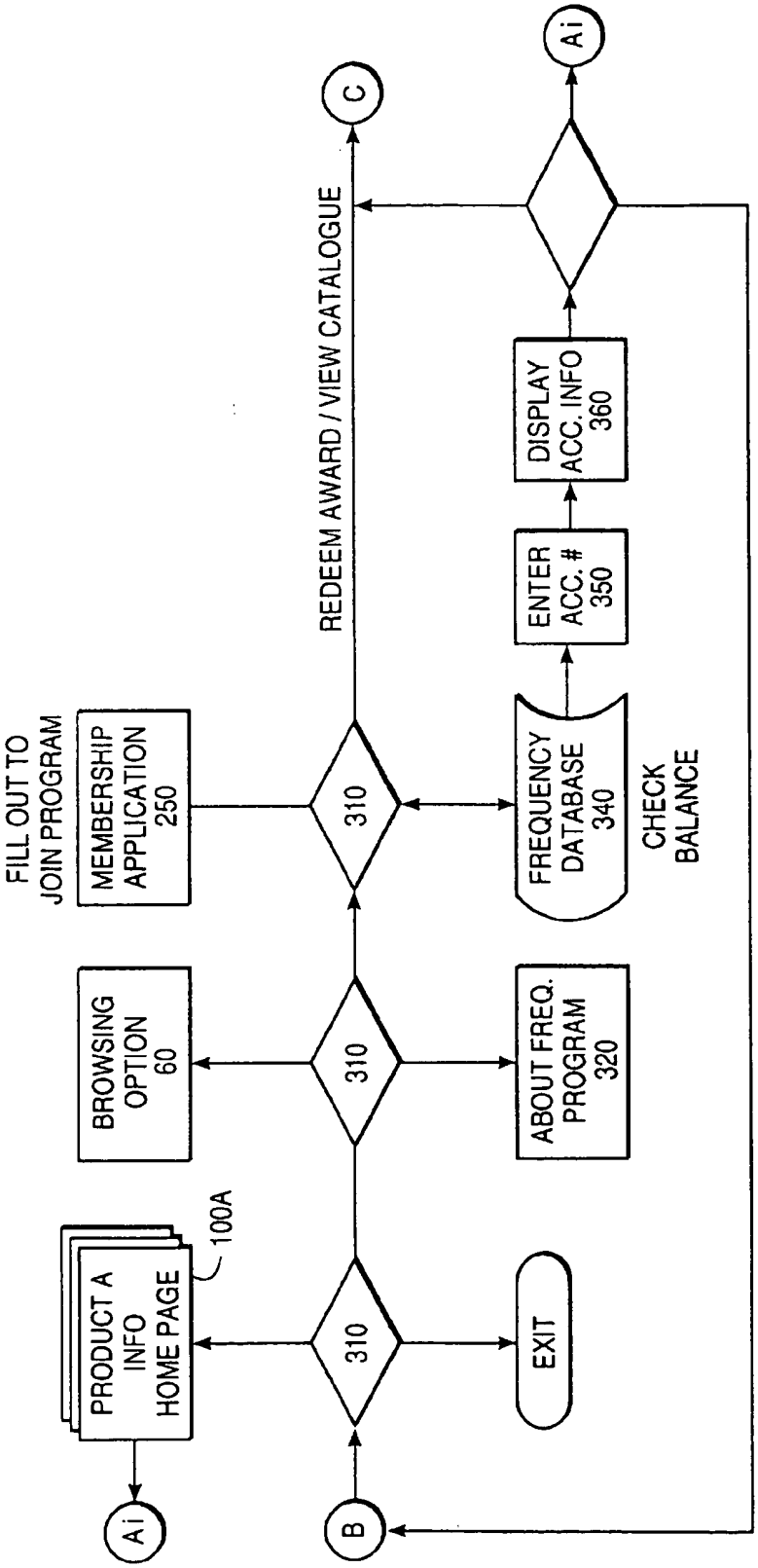

Ai
C
REDEEM AWARD / VIEW CATALOGUE
DISPLAY ACC. INFO 360
ENTER ACC. # 350
FREQUENCY DATABASE 340
CHECK BALANCE
FILL OUT TO JOIN PROGRAM
MEMBERSHIP APPLICATION 250
310
BROWSING OPTION 60
310
ABOUT FREQ. PROGRAM 320
100A
PRODUCT A INFO HOME PAGE
310
EXIT
Ai
B

Fig. 3

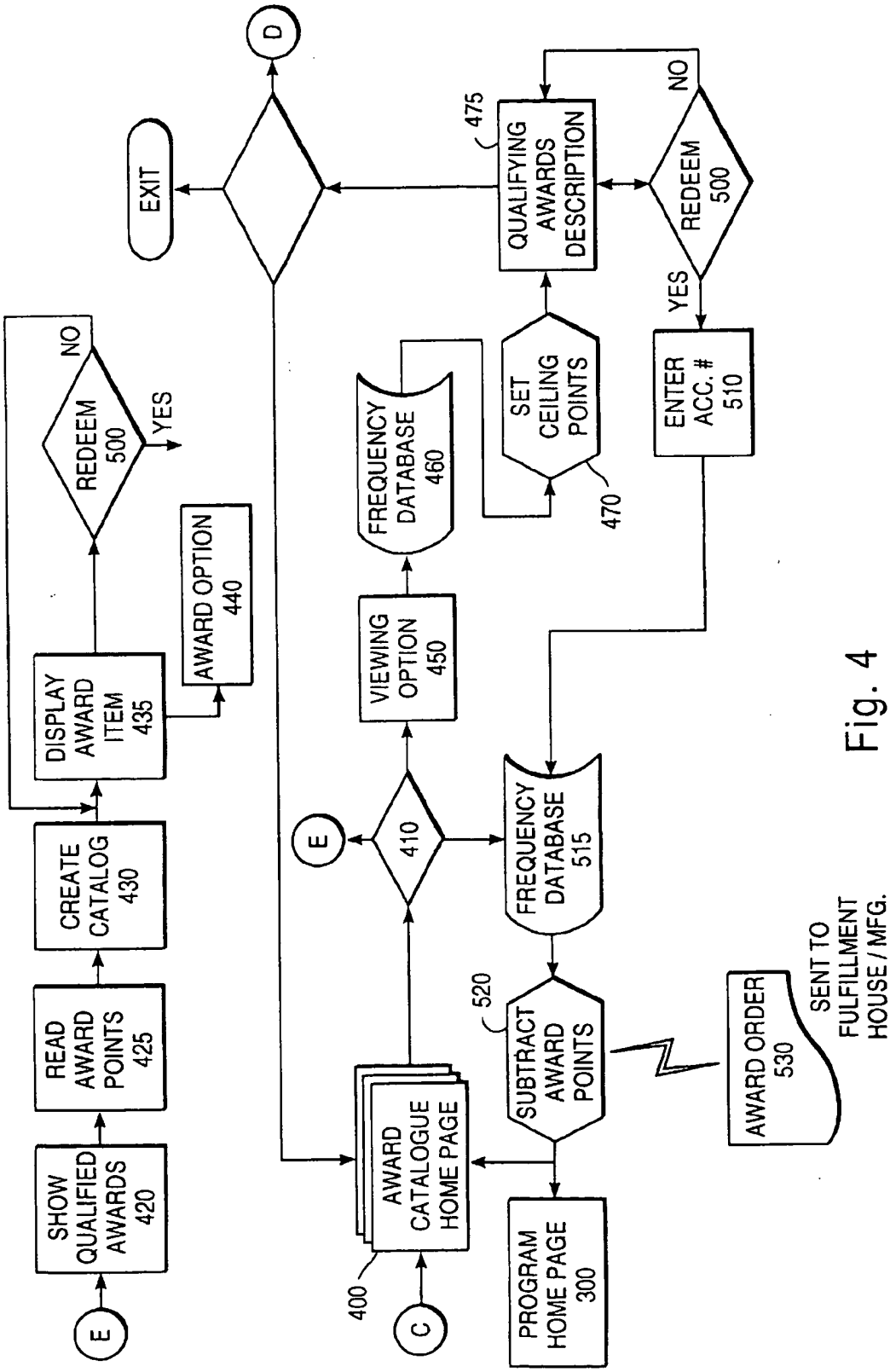

E
SHOW QUALIFIED AWARDS 420
READ AWARD POINTS 425
CREATE CATALOG 430
DISPLAY AWARD ITEM 435
AWARD OPTION 440
REDEEM 500
NO
YES
EXIT
D
400
C
AWARD CATALOGUE HOME PAGE
PROGRAM HOME PAGE 300
E
410
VIEWING OPTION 450
FREQUENCY DATABASE 460
SET CEILING POINTS
470
475
QUALIFYING AWARDS DESCRIPTION
REDEEM 500
NO
YES
ENTER ACC. # 510
FREQUENCY DATABASE 515
520
SUBTRACT AWARD POINTS
AWARD ORDER 530
SENT TO FULFILLMENT HOUSE / MFG.

Fig. 4

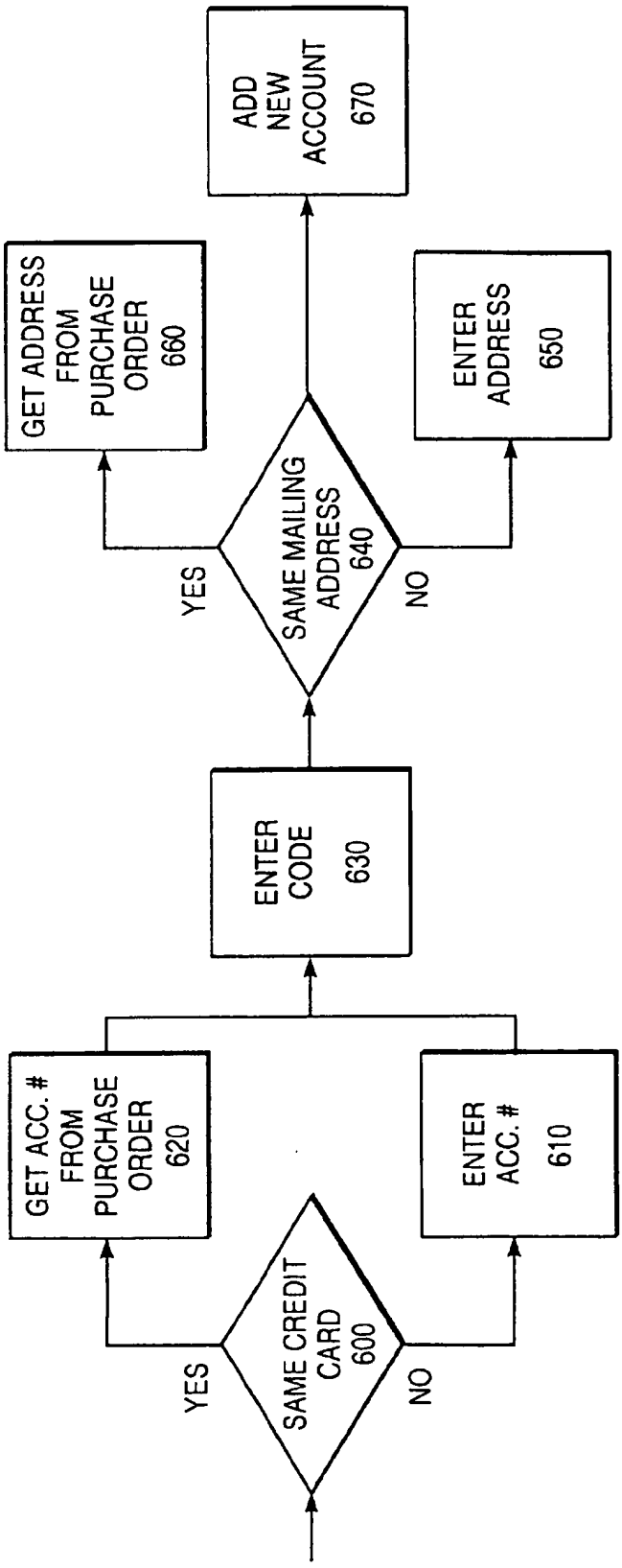

ADD NEW ACCOUNT 670
GET ADDRESS FROM PURCHASE ORDER 660
ENTER ADDRESS 650
SAME MAILING ADDRESS 640
YES
NO
ENTER CODE 630
GET ACC. # FROM PURCHASE ORDER 620
ENTER ACC. # 610
SAME CREDIT CARD 600
YES
NO

Fig. 5

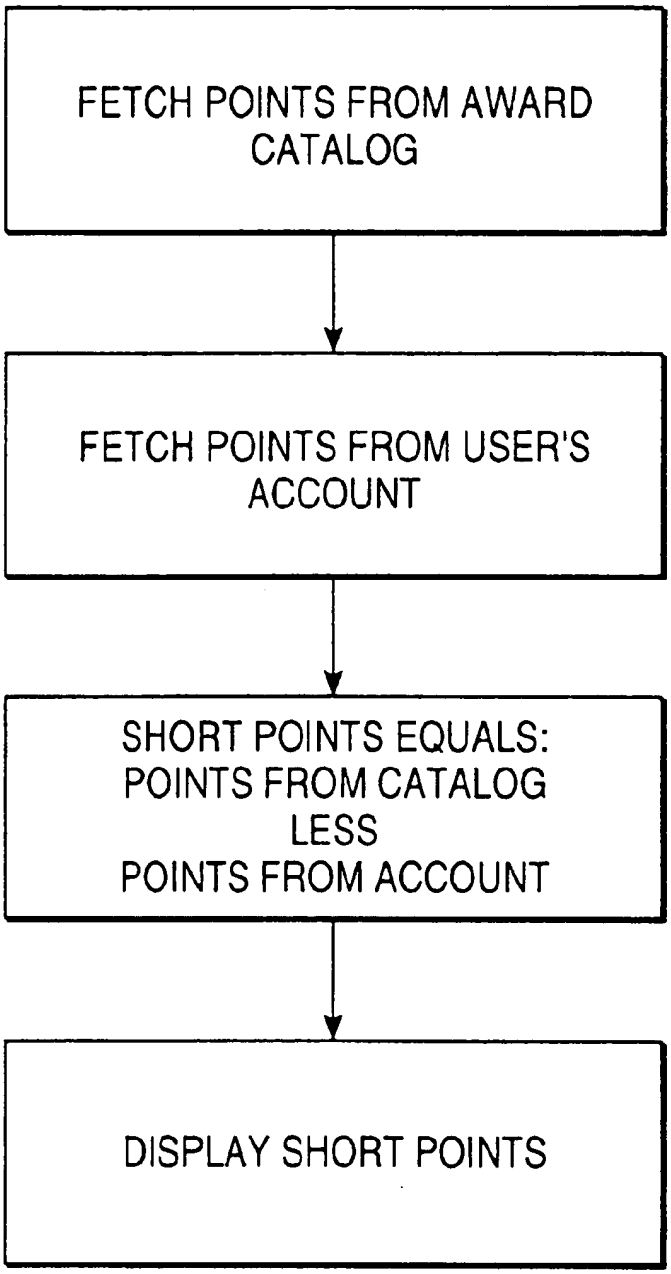

FETCH POINTS FROM AWARD CATALOG
FETCH POINTS FROM USER'S ACCOUNT
SHORT POINTS EQUALS: POINTS FROM CATALOG LESS POINTS FROM ACCOUNT
DISPLAY SHORT POINTS

Fig. 6

# FULLY INTEGRATED ON-LINE INTERACTIVE FREQUENCY AND AWARD REDEMPTION PROGRAM

This application is a continuation of SC/Ser. No. 08/572,017, filed Dec. 14, 1995, now U.S. Pat. No. 5,774,870, issued Jun. 30, 1998.

## BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to frequency and award redemption program. More particularly, the present invention relates to an on-line, interactive frequency and award redemption program which is fully integrated.

2. Description of Related Art

Frequency programs have been developed by the travel industry to promote customer loyalty. An example of such a program is a "frequent flyer" program. According to such a program, when a traveler books a flight, a certain amount of "millage points" is calculated by a formula using the distance of the destination as a parameter. However, the millage points are not awarded until the traveler actually takes the flight.

When a traveler has accumulated sufficient number of millage points, he may redeem these points for an award chosen from a specific list of awards specified by the program. Thus, for example, the traveler may redeem the points for a free flight ticket or a free rental car. In order to redeem the accumulated points, the traveler generally needs to request a certificate, and use the issued certificate as payment for the free travel.

While the above program may induce customer loyalty, it has the disadvantage that the selection of prizes can be made only from the limited list of awards provided by the company. For example, a traveler may redeem the certificate for flights between only those destinations to which the carrier has a regular service. Another disadvantage is that the customer generally needs to plan ahead in sufficient time to order and receive the award certificate.

According to another type of frequency and award program, a credit instrument is provided and credit points are accumulated instead of the millage points. In such programs, bonus points are awarded by using a formula in which a price paid for merchandise is a parameter. Thus, upon each purchase a certain number of bonus points are awarded, which translate to dollar credit amount. According to these programs, the customer receives a credit instrument which may be acceptable by many enrolled retailers, so that the selection of prizes available is enhanced. An example of such a program is disclosed in E.P.A. 308,224. However, while such programs may enhance the selection of prizes, there is still the problem of obtaining the credit instrument for redeeming the awarded points. In addition, the enrolee must allow for processing time before the bonus points are recorded and made available as redeemable credit. Thus, the immediacy effect of the reward is lacking in these conventional incentive programs.

## SUMMARY OF THE INVENTION

In view of the above, the present invention is advantageous in that it provides an on-line, interactive incentive program which is fully integrated.

The disclosed invention is also advantageous in that it provides an on-line access to product information, product purchases using an on-line electronic order form, award catalogs, and award redemption using an on-line electronic redemption forms.

Another advantage of the subject invention is that it awards bonus points immediately upon purchase of a merchandise.

The present invention is further advantageous in that it provides bonus points which are immediately made available for redemption.

Another advantage of the present invention is that it allows the customer to select a prize immediately upon the award of the bonus points.

A further advantage of the present invention is that it allows a customer to order a prize and redeem the awarded points towards the ordered prize immediately upon the award of the bonus points, thus enhancing the immediacy effect of the reward program.

Yet another advantage of the present invention is that it provides an electronic sign-up form for on-line signing up by users.

The above and other advantages are provided by the disclosed invention which includes provisions for access over the internet. Upon gaining of an access, the customer is able to browse through a merchandize catalog, an award catalog, view the bonus points available for redemption in the customer's award bonus account, and get information about the products for purchase, the program, and the customer's account. The program also enables the customer to order merchandize on-line, order prizes on-line, and redeem awarded points on-line. Accordingly, the selection of available prizes is expanded by the merchants who join the program, and the bonus award is made instantly redeemable.

## BRIEF DESCRIPTION OF THE DRAWINGS

Other objects and advantages of the present invention will become apparent from the following description of the preferred embodiment with reference to the drawings, in which:

FIG. **1** is a flow chart showing the access part of the program of the preferred embodiment of the present invention;

FIG. **2** is a flow chart showing the product selection and on-line purchase part of the program of the preferred embodiment of the present invention;

FIG. **3** is a flow chart showing the membership part of the program of the preferred embodiment of the present invention;

FIG. **4** is a flow chart showing the award redemption part of the program of the preferred embodiment of the present invention;

FIG. **5** is a flow chart showing an enrollment routine.

FIG. **6** is a flow chart showing an exemplary routine to determine the number of points the user is short of for redeeming a particular product.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The program according to the present invention will be described with reference to FIGS. **1–5**. FIG. **1** is a flow chart showing the access part of the program. In FIG. **1**, **10** indicates access via an on-line provider such as AOL™, CompuServe™ etc. On the other hand, **20** indicates a direct access to the internet, such as via Netscape™. Upon gaining an access to the internet, **30**, the program proceeds to a selection menu **40**. Depending on the user's choice, from the

selection menu **40** the program may proceed to PRODUCT A HOMEPAGE **100A** or PROGRAM HOMEPAGE **300**. Alternatively the user may choose to exit the program via EXIT, **50**.

It should be noted from the outset that in the preferred embodiment of the disclosed invention, the user may backtrack from any particular point in the program. Notably, the user is able to return to selection menu **40** from any part of the program. This being stated generally, it will be appreciated that this feature is applicable to the further program steps of the preferred embodiment described below and, therefore, it will not be repeated in the following description.

In FIG. **1**, PRODUCT A HOMEPAGE, **100A**, is a homepage of a particular type of products. For example, PRODUCT A HOMEPAGE, **100A**, may be a homepage for men's shirts. In such an example, the PRODUCT A HOMEPAGE, **100A**, may include icons to allow the user to select information regarding, for example, different brands, price ranges, types (dress shirts, sport shirts, etc.), and thereafter review the products available relating to the particular selection in a manner much similar to reviewing a printed product catalogue.

Alternatively PRODUCT A HOMEPAGE, **100A**, may identify a particular brand. In such an example PRODUCT A HOMEPAGE, **100A**, may include icons to allow the user to review information regarding particular products sold by this particular brand.

In the preferred embodiment, the capability to view information regarding the various products is enhanced by providing the user with various "browsing" options, generally implemented in the form of icons. This is depicted in FIG. **1** as BROWSING OPTION **60**. Thus, for example, the user may choose to list the products alphabetically, list the brands alphabetically, or use a search engine to create a group of products which fit the user's requirements. Any conventional search engine may be used for this purpose. Such a search engine can be implemented for accepting a boolean string, or by collecting the user's response to an inquiry set. The fields for the search engine may include, for example, key words, brands, price range, material etc.

In FIG. **1**, BROWSING OPTION **60** is shown at the same level as PRODUCT A HOMEPAGE, **100A**, to indicate that in the preferred embodiment the user may go directly to view the products information, or arrange a new list of products according to the user's needs. However, it will be appreciated by those skilled in the art, that other arrangements are possible. For example, BROWSING OPTION, **60**, can be inserted between SELECTION MENU **40** and PRODUCT A HOMEPAGE **100A** so that the user may have to enter his preferred way of viewing the products before the user is able to select the products' homepage.

In the Figures, PRODUCT A HOMEPAGE, **100A**, is depicted as multiple pages. This depiction signifies two features of the program of the present invention. The first feature, is that PRODUCT A HOMEPAGE, **100A**, may include more than one page. Thus, if a large amount of information needs to be included in PRODUCT A HOMEPAGE, **100A**, the hoinepage may actually comprise several pages and the user will be provided with a scroll option so as to be able to scroll over the information pages. Another feature is that from the selection menu **40** the user may be able to choose other products homepage such as, for example, PRODUCT B HOMEPAGE, PRODUCT C HOMEPAGE, etc., which are depicted impliedly in the drawings as pages following PRODUCT A HOMEPAGE, **100A**.

In a similar manner, PROGRAM HOMEPAGE, **300**, is shown in the Figures as multiple pages. (It will be understood by those skilled in the art that PROGRAM HOMEPAGE **300** is the main internet address for the incentive program system). This depiction also signifies two features of the program of the present invention. The first feature, is that PROGRAM HOMEPAGE, **300**, may comprise multiple pages with a scrolling feature to allow the user to scroll for viewing the information contained in the pages. The second feature is that several incentive programs, or incentive level programs may be available for access from the selection menu **40**. For example, several different programs may be accessible, each program being managed by a different incentive company. Alternatively, or in addition, several incentive level programs may be accessible from the selection menu **40**.

In the case of several incentive level programs, restrictions may be imposed for accessibility to the various incentive level programs. For example, a particular incentive company may manage three incentive programs: white, silver and gold. The white incentive program can be accessible for enrollment by any approved user. On the other hand, the incentive company may allow limited access to the silver and gold incentive programs for providing information only, while enrollment may be restricted only to those users who satisfy set requirements. These requirements may relate, for example, to a certain level of purchasing within a given period, credit rating, gross salary, special company promotion program, etc. As in the above, while these various features have been described herein, they are depicted in the drawing simply by showing multiple pages following PROGRAM HOMEPAGE **300**.

If a user selects PRODUCT A HOMEPAGE **100A**, the program proceeds to a selection menu **110**, shown in FIG. **2**. Incidentally, the routines shown in FIG. **2** are depicted to proceed from the routine of FIG. **1** by the designation Ai. This designation is to alert the reader that this particular routine is generic to all the other products homepage, such as PRODUCT B HOMEPAGE, PRODUCT C HOMEPAGE, etc.

Therefore, while the description provided herein relates to PRODUCT A HOMEPAGE, **100A**, this is only for demonstration purposes and it will be appreciated by those skilled in the art that similar processing would follow upon selection of a different product homepage.

With continued reference to FIG. **2**, selection menu **110** provides the user with the following options: proceed to PROGRAM HOMEPAGE **300**, proceed to PRODUCT i HOMEPAGE, **100*i***, (i being any of the number of available products homepage) or proceed to ORDER FORM **130**. Alternatively, the user may change the list of products by choosing the appropriate browsing option or using the search engine to create a new list of products (not shown). Upon selection of PRODUCT i HOMEPAGE, **100*i***, the program reverts to step Ai, i.e., to SELECTION MENU **110**. Upon selection of PROGRAM HOMEPAGE **300**, the program proceeds to step B shown in FIG. **3**, which will be described later.

If the user decides to purchase an item, the program proceeds to ORDER FORM **130** and the user is prompted to electronically provide entries to the appropriate queries in the order form. Thereupon, a communication link is established and the program performs a CREDIT CHECK routine, **140**, to verify the availability of funds for purchase.

At this juncture, a particular feature of the program of the present invention will be described. As noted above and

shown in FIG. 1, the user may access the internet using an on-line provider or an internet direct access. If the user is accessing the internet via an on-line provider, his credit information (account number, type of credit card etc.) is available directly from the on-line provider. Accordingly, in performing the CREDIT CHECK routine **140**, the information needed for the credit check can be obtained from the on-line provider. Alternatively, if the user gained access via an internet direct method, the CREDIT CHECK routine **140** may provide an inquiry screen requesting the user to enter his credit information.

A related feature of the present invention is that when the user enters ORDER FORM **130** from a particular product homepage describing a particular product, it is very likely that the user wishes to purchase that particular product. Therefore, the relevant information regarding the product can be read from the product's homepage and pasted at the appropriate positions in the ORDER FORM **130**. Thus, the user will only have to enter information specific to options such as size, color, quantity, etc.

At step **130**, certain predetermined information is striped off from the completed order form and sent to the credit check **140**. Such information may be, for example, credit card number and dollar amount. This is because much of the information included in the order form is irrelevant to the person's credit, and the credit institution may be unable to handle the extra information. Furthermore, sending the least amount of information would expedite the credit check.

If the CREDIT CHECK routine **140** result is negative, in step **150N** the user is provided with a message to that effect. The program may then prompt the user to enter another credit card number or to exit. However, if the CREDIT CHECK routine **140** result is positive, in step **150P** the program proceeds to establish a communication link and places a PRODUCT ORDER, **160**, with the product company. As shown in FIG. **2**, in the preferred embodiment PRODUCT ORDER **160** is placed by electronic means such as e-mail or facsimile so as to render the program of the present invention fully integrated in an interactive on-line system; however, the ORDER FORM **160** can alternatively be place by conventional means by simply printing and mailing the ORDER FORM **160** to the product company.

As shown in FIG. **2**, while the communication link is established to the product company, the program also proceeds to the FREQUENCY DATABASE, **170**. In FREQUENCY DATABASE **170** the user's information is checked against the database of enrolled users. If it is determined that the user is an enrolled user, **180E**, the program proceeds to step **190** to calculate the award points according to a preprogrammed formula. Thereafter the program proceeds to add the points to the enrolled user's account, **200**, and display the account information and the added points to the user, **210**. From this point, the program may return to ORDER FORM **130**, to step Ai (not shown), to PROGRAM HOMEPAGE **300** to view the awards catalog (not shown) or proceed to SELECTION MENU, **40**, (not shown).

The preferred embodiment includes a particular feature wherein in addition to displaying the points added to the account, the program includes a routine to display a selected award or product, and the number of points the user is short of in order to receive that award or product. For example, during particular periods certain awards or products may be designated as under a "special program". Thus, during those periods, the award would require a reduced number of points and/or the product would be available under special favorable terms. The user may be notified of that fact, to thereby entice the user to purchase additional products in order to qualify for the "special program" terms.

In order to implement the "special program," the information regarding the award/product needs to be read. The number of points required to redeem the particular qualifying award is then fetched. Similarly, the user's account is accessed and the number of points in the user account is fetched. The number of points read from the user's account is subtracted from the number of points read from the award information and the result is displayed as the number of points the user is short of to redeem the particular qualified award. An exemplary flow chart is provided in FIG. **6**.

On the other hand, if in step **170** it was determined that the user is a new, unenrolled user, **180N**, the program proceeds to step **220** to calculate the award points according to the preprogrammed formula. Thereafter, the program proceeds to step **130**, wherein a message is sent to the user identifying how many points he will earn should he enroll in the program. Step **230** also inquires whether the user is interested in joining the program. Accordingly, step **230** may be in a form of a message such as, for example, "By enrolling in the incentive program you will earn [X] points for purchasing the [insert the item purchased]. These points may be redeemed toward exciting awards. Are you interested in enrolling or viewing the award catalog? Y/N."

If in step **240** the user selects NO in response to step **230**, the program proceeds to ORDER FORM **130** or to process Ai (not shown), which proceeds to SELECTION MENU **110**. Alternatively, after receiving NO in step **240** process may continue to SELECTION MENU **40**. At step **240**, if it is determined that the user would like to sign up with the award program (join), the program proceeds to step **250** which is a sign up routine. Any conventional sign up routine may be used at this stage of processing. At the end of the sign up routine, the program can return to point Ai, or to the purchase order form. The user may sign off from any of these locations.

For illustration purposes, a general flow of an enrollment routine f6r signing up is shown in FIG. **5**. This routine may be entered from may different places in the program, e.g., after making a purchase, after reviewing information regarding the program, etc. Accordingly, the beginning of the routine of FIG. **5** is shown "floating."

At step **600** the user is prompted either to enter a credit card account number, **610**, or to indicate that he wishes to use the same account used to access the internet or to purchase an item, in which case the account number is obtained from within the program, **620**. (It should be recognized that the user's name can also be obtained internally from the on-line access program.) At **630** the user is prompted to enter a personal identification code, which can generally be a four letter/number code. At **640** the user is prompted to enter his choice of mailing address—the address indicated on the order form, **660**, or a different address, **650**. (A different address can be entered in the order form, for example, when purchasing a present to be mailed to the recipient). At **670** the program creates a new account in the database.

In FIG. **2**, steps **190** and **220** may be combined and the awards point calculated before reaching step **170**. That is, upon obtaining a positive credit check at step **150P**, the program can proceed to calculate the award points before proceeding to step **170**. Then after performing step **180**, process can proceed either to step **200**, when it was determined that the user is an enrolled user (**180E**), or to step **230**, when it is determined that the user is not an enrolled user (**180N**).

In the description of the preferred embodiment, the term product also refers to a gift certificate. The following examples are provided in order to make this feature clearer to the reader. When a user accesses the various product homepages, the user has the option to purchase a gift certificate rather than purchasing an actual product. The gift certificate can be directed to a particular merchant, a particular manufacturer/brand, or to all the products available through the program.

In the preferred embodiment the gift certificate is sent electronically to a computer designated by the user to be printed by a printer linked to the designated computer. Thus, for example, if the user knows the account number of the recipient of the gift certificate, the user may purchase the gift certificate and designate the recipient's account as the designated computer. Accordingly, the gift certificate will be electronically sent to the recipient's computer, or electronically added to the recipient's account while electronically informing the recipient of the transaction. Therefore, the user will not have to mail the certificate to the recipient.

It should also be realized that the user will be credited award points corresponding to the price of the gift certificate purchased. Thus, while the recipient will receive the gift certificate for purchases, the user will receive the award points. In addition, the user may use award points from his account as payment for the purchasing of a gift certificate; thus effectively making the award points available for purchases by a recipient. This can be user to entice unenrolled recipients to join the program.

When a user selects PROGRAM HOMEPAGE **300** (e.g., from SELECTION MENU **40** or from SELECTION MENU **110**), the program proceeds through to SELECTION MENU **310**, shown in FIG. **3**. In FIG. **3**, SELECTION MENU **310** is shown as three consecutive decision points. This represents the structure in the preferred embodiment wherein each of the options shown branching from the three decision points are available for selection from PROGRAM HOMEPAGE **300**.

SELECTION MENU **310** allows the user to exit the program, go to PRODUCT Ai HOMEPAGE **100**A (from which program would proceed to Ai in FIG. **2**), go to the BROWSING OPTION **60**, learn about the award program by selecting ABOUT AWARD PROGRAM **320**, apply for membership by selecting MEMBERSHIP APPLICATION **250** (see, FIGS. **2** and **5**), review the user's account by selecting the FREQUENCY DATA BASE **340**, or review the awards catalog by selecting AWARD CATALOG HOMEPAGE **400** (shown in FIG. **4**).

Upon selecting FREQUENCY DATABASE **340**, the user will be prompted to enter the account number, the identification code, or both at step **350**. In the program of the present invention, the account number and the identification code are linked together, for user for which they are available. Thus, when a user account is established in the frequency database, data is included to link the user's account number to the user's identification code. (It should be noted that account number can refer to a credit card account number, an account number internal to the program, etc.)

If the user has entered the internet via an on-line provider **10**, his credit card account number can be obtain on-line from the on-line provider. Therefore, rather than prompting the user to enter his credit card account number or his program account number, the credit card account number can be obtained on line from the on-line provider, and the account can be matched against the accounts in the frequency database. If a match is obtained, the program account number can be read from the frequency database. However, for security purposes, it is preferable that the program will not proceed to step **360** to display the account information before the user has been prompted and has entered at least the correct identification code at step **350**, which is matched with the account number.

If the user selects AWARD CATALOG HOMEPAGE **400** processing proceeds to the routine shown in FIG. **4**. In the preferred embodiment several options are available for viewing the award catalog. This is represented by the SELECTION MENU **410**, although those skilled in the art would recognize that other processing can be provided for viewing the award catalog. As shown in FIG. **4**, at least two options are made available by SELECTION MENU **410**: SHOW QUALIFIED AWARDS **420** (shown continuing at branch E) and VIEWING OPTIONS **450**. QUALIFIED AWARDS **420** allows the user a quick access to viewing all the awards the user is qualified for. VIEWING OPTIONS **450** allows the user to view the awards according to the order selected by the user.

If the user selects QUALIFIED AWARDS **420**, the frequency database is accessed to determine the award point, **425**. Thereafter, the entire award catalog is scanned and a qualified awards database is created for the particular number of award points read from the user's account, **430**. Thereafter, the first page of the first award is displayed, **435**, and the user can browse through the catalog created in step **430**. Alternatively, the user can select QUALIFIED AWARD OPTION **440** for different options of arranging and viewing the qualified awards catalog. These options can be, for example, by alphabetical order, by brands, by product, etc.

While the above method of displaying the qualified awards is workable, it may take too much time to scan all the awards in order to "custom" build a qualified awards catalog. Therefore, other alternatives may be used for creating the qualified award catalog. According to the preferred alternative, point levels are defined. For example, point level 1 can include all awards of value up to 500 points, point level 2, up to 1000 points, etc. When the user's account is read at 425, the highest point level the user is qualified for is determined. At this point a message may be displayed such as "You are qualified for point level 3 and have additional 350 points in your account. To qualify for point level 4 you will need 150 additional points".

If memory size is not a problem, different libraries can be stored, each of which corresponding to a certain point level. Thus, for example, award library 1 can include all the awards which can be redeemed by a number of points defined by point level 1. In the above example, award library 1 will include all awards worth up to 500 points. Thus, when the point level of the user is determined, all the awards in the corresponding library are made accessible as qualified awards. This allows for fast access, since the step **430** of creating the qualified catalog is skipped. However, such system may require large amount of memory, since many libraries may be needed to store the various awards of different point levels.

In the preferred embodiment the award libraries are arranged in a progressive manner, so as to avoid the need for a large memory size. The above example of the point levels will be used to explain this feature. Using the above example, award library **1** should include all awards worth up to 500 points. Award library **2** should include all awards worth from 501–1000 points, etc. Thus, if the user is qualified, for example, for point level 2, access is made to

award libraries 1 and 2. Thus, duplication of awards in the various libraries is prevented.

A further option would be to flag the various awards according to the point level for which they are qualified. Accordingly, when the point level of the user has been determined, the awards are scanned for the appropriate flag and the qualified award library is created in this manner. While this feature does not eliminate step **430**, the qualified award library can be built in less time than by scanning the required points and comparing each required point to the available points.

By selecting VIEWING OPTIONS **450**, the user may set the order in which to view the awards. Thus, for example, the user may view the awards by alphabetical order, enter a ceiling point number for viewing all awards up to that ceiling, view awards by product or brand, etc. The award catalog of the program of the preferred embodiment includes a feature whereby when a particular award is shown, it includes information regarding how many points are required to redeem that particular award, and how many points the user is short of in order to redeem that particular award.

To implement the above mentioned feature, the program accesses the user's account in the frequency database and reads the amount of award points the user has in his account. Then, whenever the program displays a particular product, the program subtracts the number of point available in the user's account from the number of points required to redeem the award. The result is displayed as the number of points the user is short of to redeem that award. Of course, if the user is not enrolled in the program or does not have any award points in his account, the number of point the user is short of will be equal to the number of points required to redeem the award. An exemplary flow chart is shown in FIG. **6**.

Another particular feature for viewing the award catalog is shown in FIG. **4**. The user is provided with an access to the frequency database via FREQUENCY DATABASE **460**. While in FIG. **4** FREQUENCY DATABASE **460** is shown to proceed from VIEWING OPTION **450**, it would be appreciated that access to the frequency database and the routine of the feature described below can be provided in other places in the program.

Upon accessing the frequency database, the user may view the account to verify the amount of redeemable points recorded therein. Thereafter, the user may enter any ceiling awards points of the user's choice, **470**, for viewing the awards worth up to that ceiling, **475**. Processing for displaying the qualified awards can then proceed as shown in steps **435**, **440**, and **500** in branch E of FIG. **4**.

In the preferred embodiment, the user may enter the REDEEM routine **500** at any point in the program. In FIG. **4** this feature is represented by the several REDEEM **500** selections depicted at many points of the program. When entering the REDEEM routine, the user may be prompted to enter the account number, the identification code or both, **510**. This is similar to the description provided with respect to step **350** in FIG. **3**. Thus, only the identification code may be required if on-line access was gained via an on-line provider. Thereafter, the proper award to be redeemed is determined.

It should be noted that if the REDEEM **500** step has been entered into from an award page, the award described in that particular page may be automatically read into the REDEEM **500** routine as the selected award. However, the user may be prompted to verify that this is the correct award he wished to redeem and enter appropriate selections, such as color, size, etc. Otherwise, the user may simply be prompted to enter the award by, for example, an award code. It should also be noted that if the user has designated the ceiling award points, the user's account needs to be accessed to verify that the user has sufficient points to redeem the chosen award, **515**.

The proper amount of points is then subtracted from the user's account and an adjustment is made in the frequency database, **520**. A link is then established to the fulfillment house or directly to the product manufacturer and an award order is communicated, **530**. Thereafter, the program returns to the PROGRAM HOMEPAGE **300**.

In the description of the preferred embodiment, the term "user" also refers to merchants, product manufacturers, award program administrators, etc. These particular users may be provided with a special access code. Upon entering the special code, these particular users may be provided with a privileged access to the program which allows them to make limited changes to the data. Thus, for example, a merchant may use this special access to change a price charged for a particular product. Similarly, a program administrator may gain privileged access to enter newly added awards available through the program. In addition, in the preferred embodiment a report is generated upon each privileged entry so that the changes made can be monitored.

Certain variations would be apparent to those skilled in the art, which variations are considered within the spirit and scope of the claimed invention.

What is claimed is:

**1**. A method for implementing an on-line incentive program, said method comprising the steps of:

providing an Internet webpage accessible to at least one user, via a computer system, for on-line interactive communications between said user and said Internet webpage;

offering, on said Internet webpage, at least one product for sale to said user;

determining whether said user qualifies for one or more award points based on said user's response to purchase said at least one product;

calculating said award points according to a preprogrammed formula if said user qualifies for said award points; and

issuing said award points to an account of said user if said user qualifies for said award points, wherein said award points are redeemable by said user for an award.

**2**. The method as set forth in claim **1**, further comprising the step of determining whether said user is enrolled in said incentive program.

**3**. The method as set forth in claim **2**, wherein the step of determining whether said user is enrolled in said incentive program comprises the step of checking a frequency database that comprises user enrollment information.

**4**. The method as set forth in claim **1**, further comprising the step of displaying to said user, via said computer system, said award points earned by said user.

**5**. The method as set forth in claim **1**, further comprising the step of displaying to said user, via said computer system, an amount of award points necessary to qualify for an incentive award.

**6**. The method as set forth in claim **1**, further comprising the step of permitting a user to enroll in said on-line incentive program.

**7**. The method as set forth in claim **1**, further comprising the step of providing said user with an on-line order form for ordering a product for purchase.

8. The method as set forth in claim 7, further comprising the steps of:

establishing an on-line link to an order computer; and

sending electronically to said order computer information received from said on-line order form.

9. The method as set forth in claim 1, further comprising the steps of:

receiving credit information from said user for purchase of said at least one product;

establishing an on-line link to a computer; and

sending electronically to said computer said credit information to verify available credit for said user.

10. A method for redeeming incentive awards in an on-line incentive program, said method comprising the steps of:

implementing an on-line incentive program that issues award points to users, wherein said award points are redeemable by said user for an award;

implementing an Internet webpage accessible, via a computer system, to at least one user of said on-line incentive program for on-line interactive communications between said user and said Internet webpage;

offering, on said Internet webpage, at least one redeemable award available to said user for exchange of said award points; and

permitting said user to initiate a process to receive said at least one redeemable award for exchange of said award points issued to said user through said on-line incentive program.

11. The method as set forth in claim 10, wherein the step of permitting said user to initiate a process to receive a redeemable award comprises the steps of:

accessing an account of said user;

redeeming a particular award for said user based on said points issued to said user if said user has earned sufficient points to qualify for said particular award; and

subtracting said points from said account of said user.

12. The method as set forth in claim 10, wherein the step of redeeming a particular award for said user comprises the steps of:

displaying, via said Internet webpage, a catalog of awards redeemable with said award points of said on-line incentive system; and

accepting a selection by said user that indicates an award from said catalog.

13. The method as set forth in claim 12, further comprising the steps of:

providing said user with an on-line redeeming form comprising entries that specify an award for redeeming said award points; and

establishing an on-line link to an award computer; and

sending, via said on-line link, entries of said on-line redeeming form to said award computer.

14. The method as set forth in claim 10, further comprising the step of permitting a user to review an awards catalog from said Internet webpage that comprises awards redeemable for said award points.

15. The method as set forth in claim 10, further comprising the step of permitting a user to review an account from said Internet webpage for said user, wherein said account reflects an amount of said award points credited to said user.

16. The method as set forth in claim 10, further comprising the step of permitting a user to preview information about said on-line incentive program from said Internet webpage.

17. The method as set forth in claim 10, further comprising the step of permitting a user to apply for membership to said on-line incentive program from said Internet webpage.

18. A computer readable medium comprising a plurality of instructions, which when executed by a computer, causes the computer to perform the steps of:

providing an Internet webpage accessible to at least one user, via a computer system, for on-line interactive communications between said user and said Internet webpage;

offering, on said Internet webpage, at least one product for sale to said user;

determining whether said user qualifies for one or more award points based on said user's response to purchase said at least one product;

calculating said award points according to a preprogrammed formula if said user qualifies for said award points; and

issuing said award points to an account of said user if said user qualifies for said award points, wherein said award points are redeemable by said user for an award.

19. The computer readable medium as set forth in claim 18, further comprising the computer to perform the step of determining whether said user is enrolled in said incentive program.

20. The computer readable medium as set forth in claim 19, wherein the step of determining whether said user is enrolled in said incentive program comprises the step of checking a frequency database that comprises user enrollment information.

21. The computer readable medium for as set forth in claim 18, further comprising the step of displaying to said user, via said computer system, said award points earned by said user.

22. The computer readable medium as set forth in claim 18, further comprising the step of displaying to said user, via said computer system, an amount of award points necessary to qualify for an incentive award.

23. The computer readable medium as set forth in claim 18, further comprising the step of permitting a user to enroll in said on-line incentive program.

24. The computer readable medium as set forth in claim 18, further comprising the step of providing said user with an on-line order form for ordering a product for purchase.

25. The computer readable medium as set forth in claim 24, further comprising the steps of:

establishing an on-line link to an order computer; and

sending electronically to said order computer information received from said on-line order form.

26. The computer readable medium as set forth in claim 18, further comprising the steps of:

receiving credit information from said user for purchase of said at least one product;

establishing an on-line link to a computer; and

sending electronically to said computer said credit information to verify available credit for said user.

27. A computer readable medium comprising a plurality of instructions, which when executed by a computer, causes the computer to perform the steps of:

implementing an on-line incentive program that issues award points to users, wherein said award points are redeemable by said user for an award;

implementing an Internet webpage accessible, via a computer system, to at least one user of said on-line incentive program for on-line interactive communications between said user and said Internet webpage;

offering, on said Internet webpage, at least one redeemable award available to said user for exchange of said award points; and

permitting said user to initiate a process to receive said at least one redeemable award for exchange of said award points issued to said user through said on-line incentive program.

28. The computer readable medium as set forth in claim 27, wherein the step of permitting said user to initiate a process to receive a redeemable award comprises the steps of:

accessing an account of said user;

redeeming a particular award for said user based on said points issued to said user if said user has earned sufficient points to qualify for said particular award; and

subtracting said points from said account of said user.

29. The computer readable medium as set forth in claim 28, wherein the step of redeeming a particular award for said user comprises the steps of:

displaying, via said Internet webpage, a catalog of awards redeemable with said award points of said on-line incentive system; and

accepting a selection by said user that indicates an award from said catalog.

30. The computer readable medium as set forth in claim 29, further comprising the steps of:

providing said user with an on-line redeeming form comprising entries that specify an award for redeeming said award points; and

establishing an on-line link to an award computer; and

sending, via said on-line link, entries of said on-line redeeming form to said award computer.

31. The computer readable medium as set forth in claim 27, further comprising the step of permitting a user to review an awards catalog from said Internet webpage that comprises awards redeemable for said award points.

32. The computer readable medium as set forth in claim 27, further comprising the step of permitting a user to review an account from said Internet webpage for said user, wherein said account reflects an amount of said award points credited to said user.

33. The computer readable medium as set forth in claim 27, further comprising the step of permitting a user to preview information about said on-line incentive program from said Internet webpage.

34. The computer readable medium as set forth in claim 27, further comprising the step of permitting a user to apply for membership to said on-line incentive program from said Internet webpage.

35. A computer system for implementing an on-line incentive program, said computer system comprising:

software for offering at least one product for sale to at least one user via an Internet webpage, said Internet webpage being accessible to said user for on-line interactive communications between said user and said Internet webpage; and

software for determining whether said user qualifies for one or more award points based on said user's response to purchase said at least one product, for calculating said award points according to a preprogrammed formula if said user qualifies for said award points, and for issuing said award points to an account of said user if said user qualifies for said award points, wherein said award points are redeemable by said user for an award.

36. A computer system for implementing an on-line incentive program, said computer system comprising software for offering, on an Internet webpage, at least one redeemable award available to said user for exchange of at least one award point, and for permitting said user to initiate a process to receive at least one redeemable award for exchange of said award points, said award points being issued from said on-line incentive program, and said Internet webpage being accessible to said user for on-line interactive communications between said user and said Internet webpage.

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